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THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

A SEMIMONTHLY MEDICAL JOURNAL

W. A. JONES, M. D., EDITOR

XXXVII

MINNEAPOLIS
W. L. KLEIN, PUBLISHER
1917

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VOL. XXXVII

MINNEAPOLIS, JANUARY 1, 1917

No. 1

TUBAL PREGNANCY*

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ST. PAUL

Tubal pregnancy is much more prevalent than we are wont to believe. Just off hand one would think that carcinoma of the uterus occurs much more frequently than tubal pregnancy, but on more careful investigation one will find that tubal pregnancy occurs about as often as carcinoma of the uterus. Of course tubal pregnancy is infrequent as compared to uterine pregnancy and

see a single case for years, and then run into three or four cases in a year. However long we may go without seeing a case, we must keep tubal pregnancy in mind in every pathological condition in the lower abdomen in all women of child-bearing age.

De Lee states in his text-book that the cause of tubal pregnancy is unknown. He also says

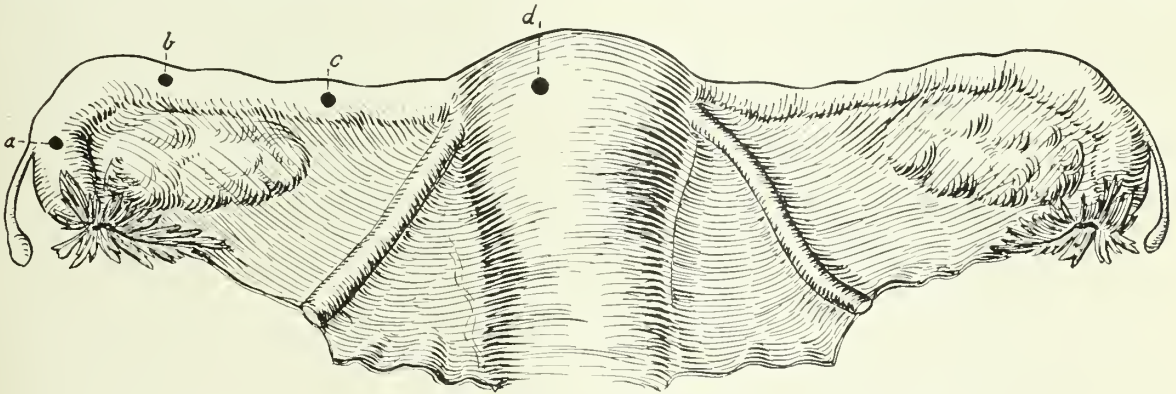


Fig. 1. Normal human uterus. (Modified from Cunningham.) a, fertilized ovum, 1 to 2 days old; b, 3 to 4 days old; c, 6 days old; and d, 8 days old.

that is probably why we think of it as being a rare disease. Tubal pregnancy is an acute surgical condition but usually seen first by the general practitioner.

To every one hundred operative gynecological cases there should be one or two cases of tubal pregnancy, but, like other things, tubal pregnancies seem to come in bunches. One may not

that pregnancy occurs normally in the tube and that it requires from four to eight days for the impregnated ovum to pass through the tube into the uterus. Anything that will prevent the progress of the fertilized ovum will cause tubal pregnancy. Crossen gives as possible causes mild salpingitis, adhesions, tumors of the tube itself or tumors pressing on the tube, and malformations; and he quotes Abel as agreeing with Freund that "some of the spiral twists which are

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

normally present in the tube in the embryo may persist to adult life and cause sufficient obstruction to lead to tubal pregnancy."

The following hypothesis is submitted for consideration: Let us look first at the comparative anatomy, beginning with the opossum. Anatomists tell us there are two vaginae with one tube emptying into each vagina. There is no uterus. With the muskrat there is one vagina with the tubes emptying into it at separate places, also no uterus, showing that the uterus as a receptacle for the growth of the young is not necessary.

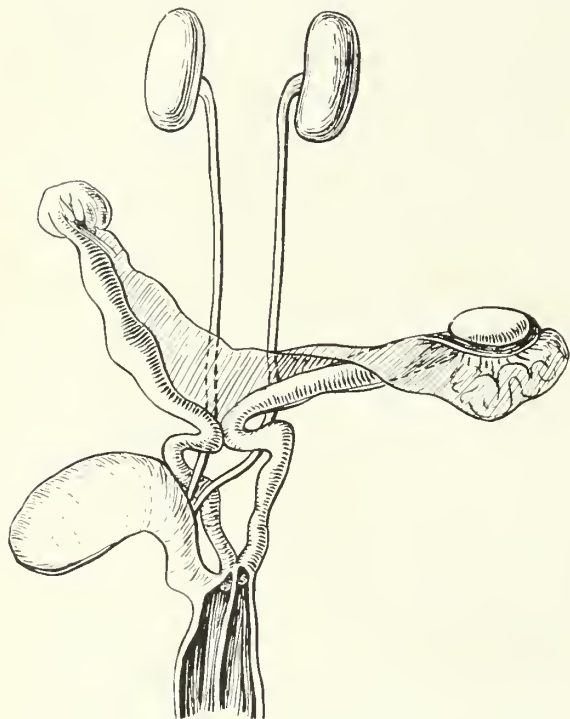


Fig. 2. Female generative apparatus of opossum. (After A. Brass.)

In the sheep there is one vagina, and one uterus with two strong horns. The uterus is formed by the union of the two horns. In the sheep the horns are more prominent than the uterus. This is the type in most of the lower animals. A single pregnancy is carried in one of the horns to term, and, if there are twins, one in each horn. Note that the uterus is still a useless organ so far as carrying the embryo is concerned. In the monkey the uterus very closely resembles the human organ, and the pregnancy is carried in the uterus. With the human embryo at the second to the third month the ducts of Müller come down and unite, forming the vagina, the uterus, and the tubes. The uterus remains bicornate for a few weeks, and, in rare instances, remains bi-

cornate throughout life. The cavity of the human uterus is always bicornate.

The illustrations show that in the lower animals the pregnancy is carried in the horns, and that the uterus plays no direct part in the process. The pictures also show that the human tubes and uterus at the second to the third month of embryonal development closely resemble the horns and uterus of the higher forms of the lower animals. The uterus is a late-developed organ in the human form, and it would be easy to conclude that it has developed at the expense of the horns, causing the Fallopian tubes to become more vulnerable, therefore more likely

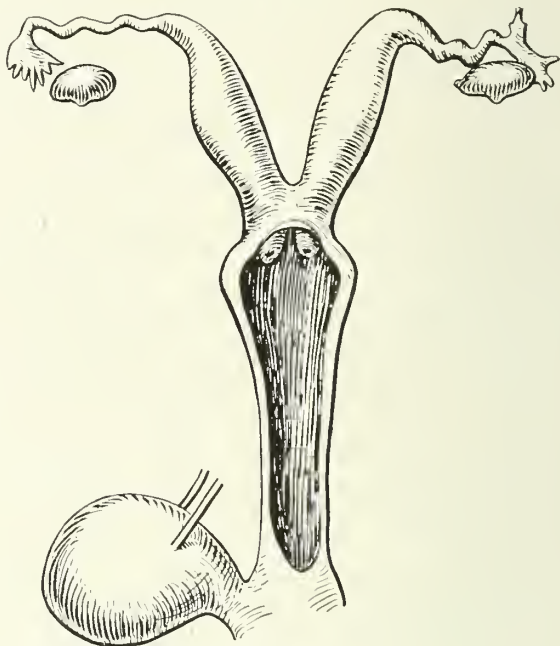


Fig. 3. Female generative apparatus of muskrat. (Modified from Kingsley.)

to retain the fertilized ovum. Any weakened organ is more susceptible to disease or infection.

Therefore we are led to believe that light attacks of salpingitis in an already weakened tube due to the changes of evolution, are the principal causes of tubal pregnancy.

The impregnated ovum is as likely to locate in one part of the tube as in another, but the nearer to the uterus it is located, the worse the hemorrhage will be when the tube ruptures. Fatal or nearly fatal cases of hemorrhage are located just outside of the uterus. When the impregnated ovum is in the fimbriated end of the tube there may be very little disturbance, and the hemorrhage very slight after the rupture. These are the cases that may recover without operation. If

the impregnated ovum is located at either of the extreme ends of the tube there may be a tubal abortion. Dr. Ernest Sterner, of St. Paul, had the good fortune to observe a tubal pregnancy in the inner end of the tube abort into the uterus. He had made a diagnosis of tubal pregnancy and had opened the abdomen; and while he was examining the tumor it passed into the uterus, and he recovered it from below.

For about the first month the symptoms of pregnancy in the tube are the same as pregnancy in the uterus. As the pregnancy grows the thin walls of the tube are stretched, causing some tenderness on that side. As soon as the placenta

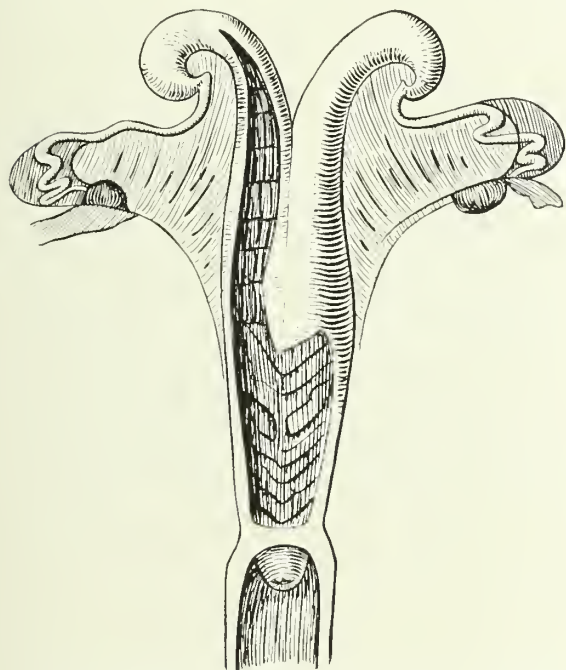


Fig. 4. Female generative apparatus of sheep. (After Kingsley.)

grows through the walls of the tube, the tenderness amounts to a pain. This pain is caused by distention of the tube and hemorrhage. The hemorrhage is slight at first, growing worse as the placenta grows larger. Simultaneously with this hemorrhage from the tube there is a hemorrhage from the vagina, which is the first characteristic symptom of a tubal pregnancy. Any woman who is otherwise well, who has had the early symptoms of pregnancy, who has missed one period by two or three weeks, with localized tenderness and pain in the region of either tube, who has had a vaginal flow lasting only a day or so, should be watched carefully as a suspected case of tubal pregnancy.

It is very seldom that the diagnosis of tubal

pregnancy is made before rupture. Uterine abortion at about the sixth or eighth week is one of the hardest things to differentiate from a tubal pregnancy. The following case came under my observation some years ago:

This woman had missed one monthly period. She thought she was pregnant, for she felt just about as she had felt with her other pregnancies. At the seventh week of the pregnancy, she began to have pains in the lower abdomen and soon started to flow quite profusely. This kept on for three or four days before the family physician was called. Upon examination he made a diagnosis of incomplete abortion, and told her the uterus would have to be emptied. This was early in the morning. The physician called me to ask if I could come to help him at about eleven o'clock. That time was impossible for me, so he called a nurse on the case and told the woman we would be back at one o'clock. When we came, to our utter surprise, we found the woman in a dying condition. The nurse said the

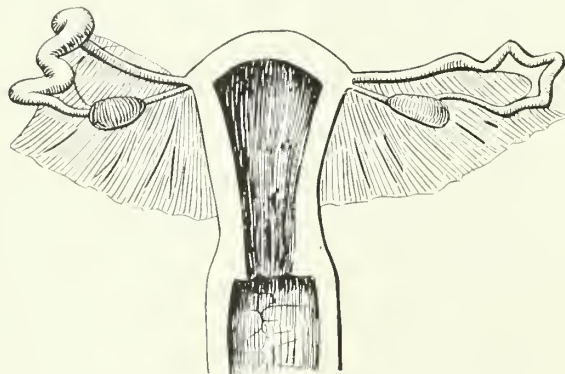


Fig. 5. Female generative apparatus of monkey. (After Kingsley.)

patient began to grow worse about two hours before, which would have been just at the time we would have been emptying the uterus according to the first plans. The diagnosis of a ruptured tubal pregnancy was now too easy. The patient was rushed to the hospital and operated on, but she died after four or five days from peritonitis.

To think how near we came to curetting this woman at the time of the rupture of the tubal pregnancy has been one of my most unpleasant medical memories.

The following case will illustrate further how careful one must be in differential diagnosis:

Nearly three years ago I was called to see a woman who had been seized two hours before with a severe pain in the lower abdomen. She gave the following very typical history. She felt from the symptoms that she was seven or eight weeks in the family way. She had missed one period, had had morning vomiting, and her breasts felt larger and heavy. She started to flow early that morning.

On examination she was almost pulseless and very weak, but her mind was clear. The heart was beating about one hundred and fifty per minute. The pulse at

the wrist could not be counted. The pain was more to the right of the uterus. Bimanual examination showed the uterus to be retroverted and somewhat enlarged. She was too tender to make out any definite mass—just a resistance.

With this history and the finds, I did not hesitate to diagnose a ruptured tubal pregnancy, and advised immediate removal to the nearest hospital and a consultation. When she was taken from a rather dark room to the ambulance, I noticed the lips were a little cyanotic, instead of white. The cyanosis of the lips should

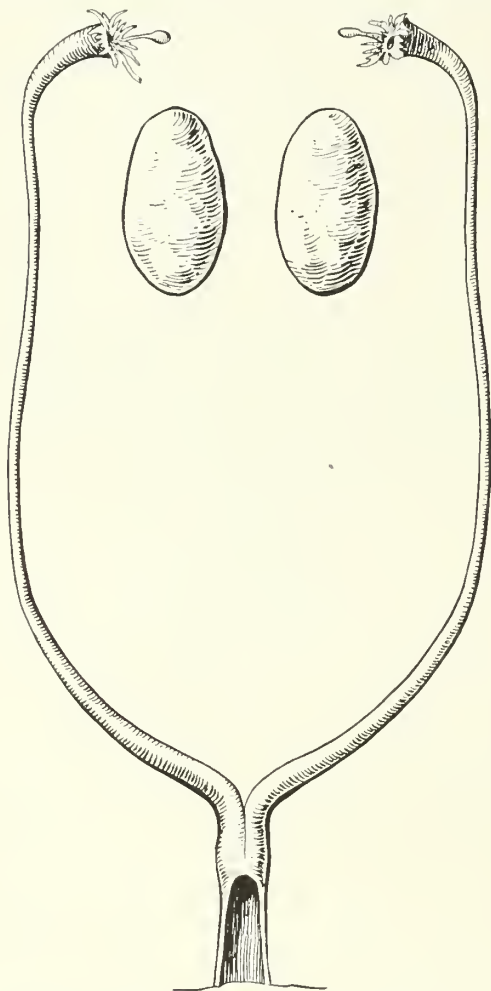


Fig. 6. Female reproductive organs of human fetus at 2 months. (Modified from Toldt Anat. Atlas.)

have led me to see at once that the weakened condition of the patient could not be due to a hemorrhage. With hemorrhage there can be no cyanosis, the lips being white or pale.

At the hospital we had Dr. Robt. Earl see her in consultation. After a careful examination he diagnosed the case as one of poison. Then we elicited the following history:

Two hours before I was called she went to the bathroom and started to flow profusely. She returned to bed, and her husband gave her a two quart douche

containing seven and one-half grains of bichloride of mercury. The uterus was retroverted, and the cervix was open. She had a miscarriage while on the toilet, and when the douche was given the poison entered the uterus where it was rapidly absorbed into the general system, and this was what caused the pain and the collapse. She died twelve hours after the douche was given, and the autopsy confirmed the diagnosis of bichloride poisoning.

The diagnosis of tubal pregnancy at times is difficult or impossible; at other times it may appear too easy. Last winter a farmer called me in a great hurry to see his wife, as he thought she was suffering from a pregnancy outside of the womb.

Upon arrival, the patient said she had a pregnancy in the tube seven years ago and was operated on. She

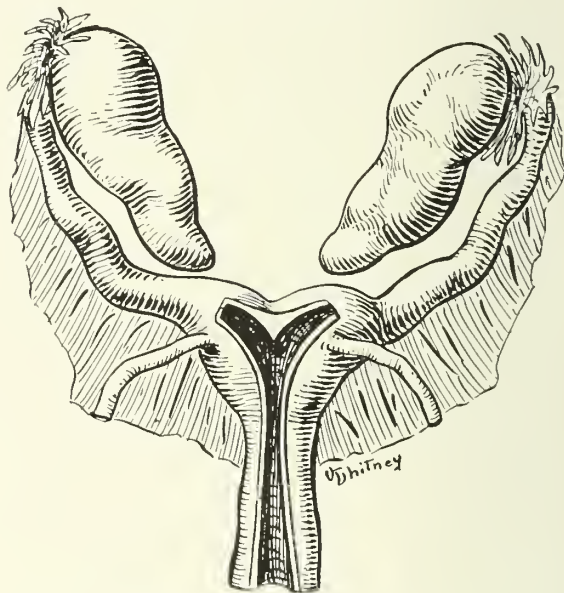


Fig. 7. Female reproductive organs of human embryo at 3 months.

thought she was seven or eight weeks along. She had had morning vomiting, and had missed one monthly period. Her present trouble began two days before with pain on the right side of the uterus, and a menstrual flow almost as much as the normal period. At first the pains came in attacks about thirty minutes apart, but at the time of my examination the pains were coming about fifteen minutes apart and were exactly like labor pains. Bimanual examination showed the uterus somewhat larger than normal, with a painful resistance on the right side. The patient said the other tubal pregnancy was in the right tube, but her present tenderness was on the right side.

Not wanting to be influenced by the patient's own diagnosis of a tubal pregnancy, and the fact that the tube was supposed to have been removed on the side where she complained of trouble, along with the history of pains which were exactly like labor pains, it was impossible for me to make a diagnosis. The diagnosis lay between tubal pregnancy and an abortion. There was no

indication for an operation unless there was a pregnancy in the tube. She was in the country. Here is what we did:

A small pocket trocar was boiled, and the cervix and posterior wall of the vagina were painted with the tincture of iodine. With a probang that I happened to have with me, I pulled the uterus well down into the vagina, and, with my finger, pushed everything away from the posterior wall of the uterus and inserted the trocar with cannula about one-third of an inch through the vaginal wall into the cul-de-sac of Douglass. Then I removed the stilet, and pushed the cannula a little further into the cul-de-sac of Douglass, when out came fresh blood, and cleared up the diagnosis. This is a perfectly safe procedure and can be done anywhere. Some recommend a large needle, but that is more dangerous. If the patient is in the hospital, where assistance is at hand, one can do a vaginal section, but it seems to me the use of the trocar and cannula is simpler and easier and almost without risk. The patient was then taken to a hospital and operated on. At operation we found a right-sided tubal pregnancy. The left tube had

twenty-four to thirty-six hours after operation. Hot water, and tea prepared in the way the patient likes it best, are to be given in large amounts, as soon as they can be retained. Since we discontinued the use of cold water and chipped ice we feel sure there is less disturbance from gas pains. Nourishment is the best stimulant. Give broths, albumin water, malted milk, and milk after the first forty-eight hours, if it is tolerated.

Pain for the first twenty-four hours after a laparotomy is due mostly to injury of the muscles. During this period the pain may be relieved by small doses of morphine hypodermically, one-sixth to one-eighth grain, not oftener than twelve

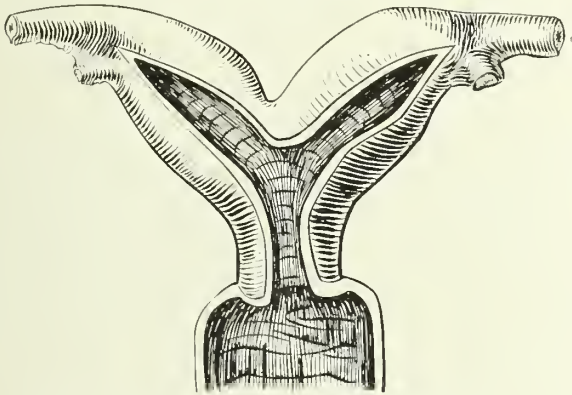


Fig. 8. Bicornuate uterus. (From Crossen.)

been removed with the first tubal pregnancy, showing that the patient was mistaken.

It was a much mooted question some years ago whether in these cases of ruptured tubal pregnancy with a severe hemorrhage we should operate at once, or wait until that first severe, acute, depressing reaction is over. It was the consensus of opinion at that time that these patients should not be operated on until they rallied from the shock. To my mind this is a mistake. Shock in these cases is due to hemorrhage, just as almost all other cases of surgical shock are due to hemorrhage; and to stop the shock one must first stop the hemorrhage. Immediate operation will save cases that would otherwise die from hemorrhage.

The post-operative treatment is about the same as in any other laparotomy. We must get as much liquid into the system as possible, by first giving an enteroclysis during the operation, when the loss of blood has been great, and proctoclysis of warm tap water continuously for the first

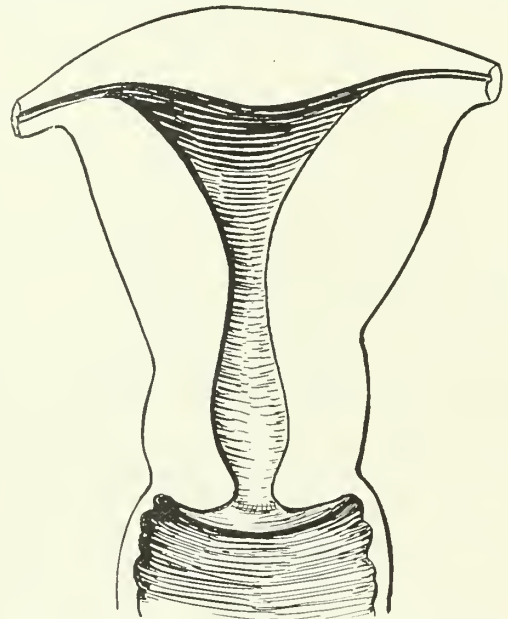


Fig. 9. Diagrammatic representation of cavity of adult human uterus. (Modified from Cunningham.)

hours apart. Pains after the first twenty-four hours are mostly due to gas in the stomach and bowels, and should never be alleviated by morphine. Turpentine will relieve gas better than any other drug with which we are familiar. At the end of the first twenty-four hours give an enema of one teaspoonful of turpentine to one pint of warm cotton-seed oil. This is to be retained if possible. In two hours follow it by a Noble's enema. These enemas may be repeated every twelve hours, if necessary. A light hot-water bag or an ice-bag over the abdomen is generally very acceptable, and should always be tried.

No laxatives or physic of any kind are ever used before or after an operation. The advantage of this became apparent to me in those

emergency cases such as tubal pregnancy and perforated appendicitis. The cases that had to be operated on in a great hurry seemed to get along better than the cases that were prepared for operation by giving a laxative or physic the night before. No one can take a laxative without feeling weaker afterwards. What do you think an athlete would say if his family physician wanted to give him a laxative the night before he was to play in a hard tournament? He would refuse to take it, yet we ask people to take laxatives who are to take part in probably the only tournament they will ever enter, the tournament of life. Discontinue laxatives and physic, give an enema the evening before and one the next morning, and your patients will be stronger with less disturbance from gas, and recovery will be easier and more uneventful.

Patients should be placed in the position which is most comfortable, and be kept off the back as much as possible.

CONCLUSIONS

1. The ovum is fertilized normally in the Fallopian tube, and requires from four to eight days to pass into the uterus.

2. I believe that pathological changes and consequently tubal pregnancy are favored by the preceding changes of evolution in the tubes and uterus.

3. The hardest thing to differentiate from tubal pregnancy is a uterine abortion.

4. After the diagnosis is made operate as soon as the patient is prepared.

DISCUSSION

DR. ROBERT EARL (St. Paul): In opening the discussion of Dr. Ghent's interesting and instructive paper, I wish to say a few words on the treatment of ruptured tubal pregnancy.

We are all agreed that every effort should be made to diagnose and operate on extra-uterine pregnancy before it has had time to rupture.

A large percentage of tubal pregnancies occur in the outer one-third of the tube. In this variety of tubal conception the ovum is usually extruded through the fenestrated extremity of the tube, when it is commonly called tubal abortion. The expulsion in this type is often not complete, and the ovum may partly block the ostium and check the hemorrhage. After tubal abortion the most frequent variety is the rupture of the tube into the peritoneal cavity. Again the ovum and membranes are usually not entirely extruded, but help to occlude the ruptured tube, and thus materially assist in checking the hemorrhage.

In these two types of rupture the hemorrhage is usually not severe enough to endanger the life of the patient. In these cases a physician is called, the diagnosis is easily made, and the patient sent to a hospital

for a comparatively safe operation. If we knew the fetus had died at time of rupture, many of the cases would not require operation, as the hemothecoele and the products of the conception would be absorbed. As it is impossible to tell without operation whether or not the fetus died at the time of rupture or expulsion, operation is indicated in all cases of tubal pregnancy in order to prevent another and probably more serious hemorrhage.

If rupture with intra-abdominal hemorrhage has occurred and the hemorrhage has not been severe enough to cause marked shock, the operation should be performed as soon as preparations can be made. When the hemorrhage has been sudden and excessive, so that the patient shows the signs of severe shock and extreme collapse, the operation should be deferred until the patient shows signs of improvement. Statistics show that the mortality from hemorrhage at time of rupture is 5 per cent. If operation is performed immediately after a severe hemorrhage, the mortality is 8 per cent. Active hemorrhage has usually ceased before the abdomen can be opened; therefore, the mortality will be lower if we wait twenty-four to forty-eight hours, so as not to add the shock of the operation to the shock and collapse caused by a severe hemorrhage.

When an ectopic gestation in the middle portion of the tube ruptures on its inferior border, the hemorrhage may occur between the layers of the broad ligament. I have personally seen four cases of this type in which hematomata extended across the entire lower abdomen; and in two of the cases the hematoma had loosened the peritoneum so that the extraperitoneal hematoma extended nearly as high as the umbilicus. In these cases the hematoma may extend across the entire pelvis with the cervix in the center or pushed to one side, if the hematoma is confined to one broad ligament.

In my four cases the hematoma had formed rather slowly without the symptoms of severe shock frequently observed in intra-abdominal hemorrhages. As the hemorrhages had ceased in these cases before they came under my observation, and as I assumed that the fetus was dead, and fearing the danger of infection, if operation was performed, with the establishment of drainage, I treated each of these cases expectantly.

Inasmuch as each of these cases made a smooth recovery without operation, I shall treat this type of extraperitoneal hematoma by watchful waiting in the future.

DR. H. B. SWEETSER (Minneapolis): I would like to take exception to the statement of Dr. Earl as regards the advisability of not operating upon extra-uterine pregnancy as soon as we see it. In the case of extreme hemorrhage and extreme collapse, if the hemorrhage is free in the peritoneal cavity, the likelihood of it stopping spontaneously is slight; and, if it stops, it is liable to recur. Hemorrhage, especially if it is extreme in amount, ought to be stopped mechanically. Since we can easily open the abdomen without giving a general anesthetic, and with very little trauma, it seems to me it is bad policy to stand by and see a patient die from hemorrhage. I have observed in my City Hospital service such a case as this: A woman was brought into the hospital early in the evening with a pulse of 120 beats. A diagnosis of extra-uterine pregnancy was made. She consented to an operation. Her father, who appeared on the scene, protested. Her pulse continued to increase. After discussing the case with her father

we gained his consent, but about that time the patient refused to be operated on, so that it was about 2 o'clock in the morning before we operated. By that time the patient's pulse was 160, almost obliterated at the wrist; and yet, under the injection of a little novocaine in the abdominal wall, we made an incision, put our hand in, clamped the tube, and, paying no attention to the blood which filled the abdomen, closed the incision; and the patient recovered. We have had several experiences

like this where we were able to watch the increase in the severity of the condition as evidenced by the diminishing power of the pulse and its increased rate, until we were sure nature could not stop the bleeding. Such patients will die if they are not operated on. It simply means that we must close the bleeding vessel, because, where the rupture is into the peritoneal cavity, the conditions are ideal for continued hemorrhage.

ACHONDROPLASIA IN A CALF WITH THYMUS IN PLACE OF THYROID

BY W. S. NICKERSON, Sc. D., M. D.

LONG LAKE, MINNESOTA

In view of the fact that the chief recent advances in medicine have resulted from observations and experiments upon some of the lower animals, I need offer no apology in reporting certain observations upon the structure of a congenitally deformed calf born near Long Lake, Minn. It was what is known in literature as a "bull-dog calf." Many such have been reported, and a smaller number of similarly deformed sheep, dogs, and other animals.

This calf (Fig. 1) was a dwarf with a relatively big head, pug nose, prognathous jaw, short body, and very short legs. It weighed 30½ lbs., and had the following measurements: root of tail to frontal prominence, 18 inches; frontal prominence to nose, 5½ inches; frontal prominence to tip of mandible, 8 inches; eye to eye, 5 inches; hind leg, groin to tip of toes, 5 inches; front leg, axilla to tip of toes, 4½ inches. The fur was everywhere soft and thick, and the body in good flesh.

The dwarf stature seemed to depend entirely upon abnormalities of the skeleton, the only abnormalities recognized in the viscera being in certain of the ductless glands, to be described later.

The bones of the skull, both cartilage and membrane, were fully ossified. The vertebræ were very short, each of those in the lumbar portion of the column occupying about one centimeter of length. The body (centrum) showed a ring of ossified tissue, which became thinner toward the center, and left a central portion 5 to 10 mm. in diameter uncalcified. The spinous processes were not fused with the laminae.

The pelvis (Fig. 2) was very much contracted, the canal being too narrow to admit the terminal phalanx of the little finger. Its cavity, seen from in front, was Y-shaped, due to the encroachment

upon each side of the enlarged acetabula. The femur was 6 cm. long, the distal end being much larger than the proximal, the internal epicondyle having a width of 6 cm. The very short shaft (1½ cm.) was hard (ossified), although the epicondyles were cartilaginous on the exterior, but compressible, owing to a very coarsely cellular structure of the interior. The tibia was 5 cm. long with similarly ossified shaft and soft epiphyses.

The skeleton of the front legs presented a very similar condition, the best idea of the amount and character of the deformity being given by the photograph (Fig. 3).

Now the question naturally arises whether this condition in the calf thus briefly described is essentially the same as any type of deformity which occurs in human infants—if so, what? The answer to this question given by previous investigators has been to classify it in four different categories, viz.:

1. Fetal or congenital rickets.
2. Osteogenesis imperfecta.
3. Achondroplasia, or chondrodystrophy.
4. Cretinism, or athyreosis.

Concerning the first of these, it is only necessary to recall the fact that rickets is always a post-natal disease, and this condition is always fully developed at birth. The term is therefore clearly a misnomer. It was introduced into the literature by H. Müller and Eberth in referring to deformed calves.

In regard to the second (osteogenesis imperfecta) Emerson says, in Osler's *Modern Medicine*, vol. 6, p. 725: "These new-born infants are often thin, very wrinkled, and with poor muscular development, in marked contrast to those of achondroplasia. The condition is not evident from superficial observation, since the body pro-

portions are fairly normal." As all of these characteristics are the opposite of those present in our calf, no further consideration need be given osteogenesis imperfecta.

The best and fullest discussion of achondroplasia is that given by Schirmer in *Centralblatt f. d. Grenzgeb. d. Med. u. Chir.*, 1907. Fussell has given what is essentially an abstract in English of Schirmer's article in the *Jour. of the A. M. A.*, 1909, p. 1614. Rankin and Mackay have also given an excellent discussion of achondroplasia in the *Brit. Med. Jour.*, June 30, 1906. These authors agree in listing the essential features of achondroplasia under fifteen heads, as follows. Let us consider briefly, as we pass along, the bearing which each of these has upon the case in hand:

1. Congenital origin.

Agreement with condition in calf.



Fig. 1. General view of the calf monster.

2. Abnormal prominence of skull.

Agreement.

3. Depression at base of nose.

Agreement.

4. Prognathous.

Agreement.

In achondroplasia there is premature ossification of the three bones, basioccipital, basisphenoid, and presphenoid, which form the base of the skull (the Grundbein of Sommering or tribasilar bone of Virchow). In fetal life these three parts are separated by synchondroses, which, in normal cases, remain uncalcified until near the close of the growth period. Their premature ossification in achondroplasiacs prevents further growth of the base of the skull, while the other portions of the skull and face continue to grow. Thus conditions 2, 3, and 4 are accounted for.

5. Distorted development of the long bones

of the extremities with increase of their normal curves.

Agreement.

6. Trunk normally developed.

Agreement, except for shortening due to skeletal changes, which also occurs in typical human achondroplasiacs.

7. Thickened ends of long bones and ribs through diaphysial and epiphysial alterations.

Agreement as to long bones. I failed to examine the ribs. (Sections of the costal cartilages showed characteristic histologic changes of achondroplasia.)



Fig. 2. Skeleton of the posterior limbs and pelvis.

8. Displacement of middle of body above navel.

Agreement when allowance is made for difference in position of body.

9. Characteristic trident form of hand.

This test is not applicable because of differences in the structure of the human hand and the foot of the calf.

10. Excess of fat tissue.

Agreement.

11. Protruding abdomen.

12. Lordosis.

Not applicable because normal curves of the human spine are so different from the bovine. Since protruding abdomen is the result of the lordosis, its relative absence is not significant.

13. Smooth, flexible skin, with hair in usual places.

Agreement.

14. Normal intelligence.

Not applicable.

15. Tendency toward other congenital abnormalities.

Agreement.

These other abnormalities will be considered a little farther on.

Schirmer, in his paper on achondroplasia, says: "Auch das sogenannte Bull-dog-Kalb, das immer Todt zur Welt kommt, ist nicht als Achondroplasia, sondern als eine Monstrosität aufzufassen." (Also the so-called bull-dog calf that always comes into the world dead is not to be regarded as achondroplasia, but as a monstrosity.) He gives no reason whatever for this dictum:



Fig. 3. Skeleton of the anterior limbs.

and, in view of the almost absolute agreement which I have shown between the conditions in this bull-dog calf and those characteristic of achondroplasia as seen in human subjects, we are surely justified, not only in refusing to accept Schirmer's conclusion, but in asserting the exact contrary, viz.: *that form of monstrosity exemplified by the bull-dog calf is achondroplasia.*

Recognizing, then, that we are dealing with achondroplasia, let us next consider the "other congenital abnormalities" in this case. The chief one manifested itself as a swelling of the throat in the thyroid region. When exposed by dissection this revealed the condition shown in the photograph (Fig. 4). On each side of the trachea was a mass of tissue (Th), which, from its position and appearance, seemed to be a lobe of the thyroid, decidedly enlarged. On histologic

examination, however, no thyroid tissue was found, but every portion taken for examination was typical thymus tissue. As, unfortunately, I did not cut all of these masses into thin slices for careful inspection, I cannot be absolutely certain that thyroid tissue was not present in small amount. However, several pieces taken from different regions of both lobes were sectioned, and only thymus tissue found; moreover, no portion of the surface gave an appearance of being different from the pieces taken. But, even if we concede the possibility that a small amount of thyroid tissue may have escaped detection, the fact nevertheless remains that there was essentially a replacement of thyroid by a very much greater amount of thymus tissue. Furthermore, the normal thymus was also present in the thorax in its normal position over the base of the heart.

I regret that I am not able to give any satisfactory account of the other ductless glands.

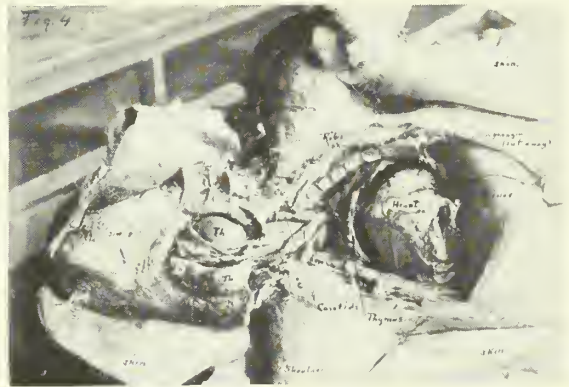


Fig. 4. Dissection of the throat and thorax. The thymus is shown lifted a little way from the heart for greater clearness.

Parathyroids were not seen. Whether present or not I do not know. When the skull was opened the condition of the tissues within was not such as to allow anything to be made out about the pituitary and pineal glands. The adrenals gave no evidence of gross abnormality, but their condition when examined precluded a study of the finer histological details. Sections of spleen appeared normal. Sections of lymph-glands showed nothing unusual except numerous multinuclear giant cells, which I assume to be normal in the calf.

There remains to be considered the relation which our calf monster bears to cretinism, or athyreosis, the fourth category to which bull-dog calves have been assigned by previous writers. If cretinism be defined as absence of thyroid then

it would seem to follow that in the case which we are considering achondroplasia = cretinism + accessory thymus tissue (replacing thyroid) or, histologically, achondroplasia = athyroidism + hyperthymism. The replacement of the parenchyma of one of the series of ductless glands arising from the embryonic gill clefts by that of another of the series is a factor which to my knowledge has not been reported hitherto.

Many investigators (Pelnar, Collman, Kassowitz, Parhon Marbe, Kienbock, and others) have thought that achondroplasia resulted from some abnormality of functioning of the glands forming hormones and the thyroid, thymus, and hypophysis have been the ones most generally supposed to be implicated.

Falta says, p. 15, "A harmonious development of the body is not possible without orderly functioning of the ductless glandular system." It is obviously indispensable to an orderly functioning of the system that a normal balance in the bulk of the parenchyma of the different glands be maintained. He says further, p. 17, "The thymus gland seems to be of importance for the assimilation of calcium in young bones." Lajous, p.

180, holds that the thymus stands "prominently as a bone-forming organ and general phosphorus-purveying organ from the time of the completion of its lymph-adenoid elements during intra-uterine life until the final elaboration of the skeletal framework."

These views concerning the function of the thymus harmonize well with the abnormal anatomical conditions here reported and help to explain the premature ossification, which has been shown to underlie some of the characteristic deformities of achondroplasia.

SUMMARY

1. The type of deformity present in "bull-dog calves" is achondroplasia.
2. In the case investigated achondroplasia is characterized by absence of thyroid tissue and superabundance of thymus tissue.
3. A replacement of the tissue of one of the ductless glands arising in the embryo from the branchial clefts (thyroid) by that of another gland of the series (thymus) was present in this case.

THE PRESENT STATUS OF THE TREATMENT OF FRACTURES*

BY OWEN W. PARKER, M. D.
ELY, MINNESOTA

Fractures of the bones of the human body have no doubt occurred since man first existed, and their treatment and management must have been one of the earliest problems of prehistoric medicine, and is no doubt one of the oldest procedures employed in the practice of surgery.

Historic medicine records the work and experiences of the natural "bone-setters" among the laity, and of a small number of physicians who possessed mechanical minds and who became expert in the treatment of fractures. For many hundreds of years these bone-setters were persons who claimed special ability to treat fractures and dislocations, and often they traveled about the country, advertising their special skill. They were probably mostly ignorant quacks, who may have done more harm than good. Among the early surgeons in more recent times, whose names are especially linked with the treatment

of fractures, are Abraham Colles, Percival Potts, Sir Astley Cooper, and Gurdon Buck.

Colles was professor of surgery in Dublin, and was the leading surgeon of his time. He was one of the first to tie the subclavian artery, and the first to tie the innominate successfully. He described the fracture of the carpus and of the radius, still known as Colles' fracture. He also laid down what is known as Colles' law, which relates to the immunity with which a healthy mother may nurse her syphilitic child.

Percival Potts was long surgeon at Bartholomew's Hospital in London. He, himself, through a fall on the street, sustained a fracture of the leg, and, while laid up in bed, he wrote a paper describing that particular fracture, which still bears his name. He was one of John Hunter's teachers.

Sir Astley Cooper was one of the greatest geniuses of his time, and perhaps of all time, in the treatment of fractures.

Gurdon Buck was also one of the great teach-

*Read before the St. Louis County Medical Society at Duluth, June 6, 1916.

ers of all times. Every physician is familiar with his name in the so-called "Buck's extension."

These men by their brilliant work added great interest and much knowledge to the treatment of fractures in their time.

For the last thirty years fractures have not received the attention of the medical profession that the subject deserves. The wonderful progress and development of abdominal surgery, surgery of special organs, like the thyroid and other organs, have attracted nearly all the attention at surgical meetings and in the literature, but of late attention is becoming very strongly directed to bone surgery and with it to fractures. The x-ray, the Lane bone plate, and the bone graft, have been decisive factors in this new interest in bone work and fractures; also the fact that insurance companies, corporations, and employers of labor under the compensation laws of various states are demanding a higher degree of efficiency in the treatment of fractures by surgeons; also trial courts and juries—all are holding us to a stricter accountability.

In no other branch of the practice of medicine is there a more dangerous field from the standpoint of possible litigation and malpractice suits. The surgeon nowhere runs a greater risk of possible future trouble. The bad effects of a fracture are a constant living advertisement of the work of the surgeon. It would seem that, in view of the requirements and danger in this field of practice, the treatment of fractures should develop into a specialty, and that it should be better paid for, whereas it is probably one of the poorest paid branches of surgery. Dr. Murphy, while operating on a fracture dislocation of the humerus, in speaking of the responsibility in operating and treating bad fractures, said: "There is no remuneration that compensates for the anxiety that one expends over these cases. Twenty-five cases of appendicitis, good, bad, and indifferent in type, are not equal to the nervous strain in operating on one of these fractures." This is a statement with which anyone who has had experience in these cases will agree. The present tendency toward universal insurance of labor, growing out of our recently enacted compensation laws, obligates us also to give greater heed to the element of time in the recovery from fractures. This is a matter of great economic importance, for, if but a few days can be saved from each fracture by the selection of the best treatment for the particular fracture, the whole saving becomes of great value.

In general today the literature of fractures is concerned chiefly with the discussion of what method of treatment will give the best results in all cases. Outside of the so-called conservative treatment of fractures by bloodless reduction, splints, and immobilization, which has been the general treatment of all time, three interesting, decided, and quite unique methods in themselves stand out prominently in the literature, each associated with the name of its chief advocate. Each advocate applies his own method to practically all cases, and claims perfect anatomical and functional results; with Bardonheuer we associate the extension methods or the German; with Lucas Championnierre, the treatment by massage and passive motion, with few splints or none at all, or the French method; and with Arbuthnot Lane, the open operative treatment, in which, after a reduction of the fragments, they are held in place by steel plates and screws, or the English method.

The consensus of the ablest surgical opinion throughout the world does not accept any one of these methods of treatment as applicable to all fractures. Surgeons are more interested in establishing what is the best method of treatment for each of the different special fractures in each particular case. Championnierre still advocates his method of massage and passive motion. Whether one accepts his views in whole, or in part only, everyone now agrees that massage and passive motion and other means which improve circulation of the limb and maintain muscle tone, are part at least of any method of treatment. The massage as practiced by Championnierre and his followers is not such as is used by the professional masseur, but is a very gentle stroking massage, so light at first as to be scarcely perceptible to the patient. It must be so light and gentle that no pain whatever is produced. The movements are to be slow and methodical, about fifteen or twenty to the minute, beginning at the distal and stroking the length of the limb in the direction of the venous current, or of the underlying muscles. The strokes are repeated monotonously for about fifteen minutes, when a change is made to another surface of the limb for the same period of time. Usually only two surfaces are treated at one time. Championnierre has been accused of having adopted the "do-nothing" treatment of fractures, and of dispensing with all splints. This, however, is not true, for he uses splints, but does not abuse them.

Bardonheuer employs extension with few ex-

ceptions for every fracture of the upper and lower extremity. He claims that with his method operation in the recent state is never indicated, and also such satisfactory results that later operations do not become necessary. The principles of his extension treatment combine traction in a longitudinal direction, with counter-traction,—transverse, oblique, etc. The extension in various directions is obtained by a system of weights and pulleys. The traction in a longitudinal direction is maintained to overcome shortening and displacement in a longitudinal direction. Counter-extensions, of which there is one or more, according to indications, is so arranged as to overcome dislocations in any other direction. At first sight the method seems complicated. It necessitates absolute rest in bed for three weeks or more, and it requires supervision by a trained physician more than once a day. It is therefore not applicable except in hospitals. It does not seem that as a system of treatment it will become very popular, especially in this country. However, in those cases in which extension is the accepted treatment one should turn to Bardonheuer for the details, and should bear in mind that, in many cases, traction in a longitudinal direction is not sufficient. Dr. Richardson, of Los Angeles, says, "In fractures in the neighborhood of the shoulder, especially those in the surgical neck of the humerus, we have had most beautiful results by the extension method of Bardonheuer, especially in old people." Most surgeons consider that operative procedures are indicated in these fractures. If good results can be obtained by the Bardonheuer method, in these cases, it would be well worth trying, especially if the condition of the patient contra-indicated operation.

The Lane method is one of which we have heard much in the last few years, and one which most of us have used in at least some of our cases. In the Surgical Section at the meeting of the American Medical Association at Atlantic City a few years ago, Mr. Lane, a guest of the Association from England, presented his well-known views on the operative treatment of fracture. Mr. Lane since 1894 has been a constant advocate of the immediate open treatment, and has practiced it in very many fractures. In the discussion in Atlantic City he made the statement that, if surgeons could not persuade themselves to this view, the courts would soon drive them to it. Since then many surgeons in America have used Lane bone plates, but it has not

become a general practice for all cases, and I believe the tendency is to use less of them than formerly, except in specially selected cases. It is well known that they should not be used unless one is prepared to carry out a very strict aseptic technic, such as Lane has perfected. While it is generally considered that Lane operates on all fractures, this would not seem to be true, for in his book he says, "It is obvious that if there is no displacement of fragments, or if the displacement can be overcome by manipulation, no operation is required." Lemon says the value of Mr. Lane's work lies in teaching us the necessity for better restoration of anatomic planes, rather than demonstrating to us a better technic for accomplishing this result. It is but a stepping-stone in the right direction, but the method itself of implanting in the tissues foreign material as a method of treatment for all fractures has already been abandoned in the large clinics. It seems to be a well-demonstrated fact that Lane bone plates, and in fact any foreign material, delays bone-union and callus-formation. It is the belief of Dr. Murphy that, since the use of plaster of Paris and Lane bone plates producing absolute immobilization, and accurate co-aptation of the fragments, we have more non-unions than in the days when apposition was less perfect, and splints did not immobilize so perfectly as plaster. This brings to mind the investigation of Nickolas Senn made many years ago on fractures of the neck of the femur. Senn was surprised to find that his best result was obtained in a dog that received no treatment at all after the neck of the femur had been divided through open incision. Older authorities have called attention to the fact that slight motion at the site of the fracture is beneficial to healing, provided the fragments are not dislocated. This would seem to be an argument also in favor of the Championnierre plan of mobilization, massage, and few splints.

The wonderful and most interesting work that has been done in bone-grafting in the last three or four years has given a great impetus to the interest in bone-surgery, and has in turn stimulated a new interest in the treatment of fractures, especially the non-unions. Such men as Albee, Murphy, Henderson, and many others are constantly operating on a large number of non-unions with perfect results, using the bone graft, unions being obtained in practically 100 per cent. Many of the cases have been previously plated and wired, and otherwise treated. It was not

uncommon a few years ago to fail even after a number of operations to obtain a union. I recall one of my cases, a miner, in whom a fracture of the humerus failed to unite after conservative treatment. I operated several times, using silver wire, freshening the ends of the fragments, and getting perfect apposition, but never obtained union. The man finally went to work in the mines, and was later killed in another accident. I am confident that the same case could have been treated by a bone graft, and union easily obtained today. We may say that the bone graft has robbed non-unions of their terrors, as thoroughly as has antitoxin robbed diphtheria of its terrors. Bone-grafting is the method par excellence in the treatment of non-unions, and is being used even in fresh fractures, and may be destined to be used more frequently in the future in place of Lane plates and foreign materials. Albee says, "I have used the inlay graft in the treatment of fractures since 1911, and have secured union in every instance in a series of 50 cases of fresh and on ununited fractures." One of the series of ununited fractures had been operated on seven times, including one intramedullary grafting. Twenty-seven of these cases had been previously plated with Lane bone plates. During the last two years, Albee has not used metal for any internal fixation purpose. Instead of Lane plates or other metal plates he uses the inlay graft. Albee further says that in every case of non-union which has existed for any length of time, from any cause whatsoever, whether from soft tissue between the fragments, local infection, systemic disease, idiosyncrasies, lack of osteogenesis, or from any inhibitory influence to bone growth from a Lane plate or other metallic plate, there is always a distinct pathological change in the fragment ends, consisting in diminution and degeneration of bone cells and a coincident increase of calcium salts, or, in other words, sclerosis. This eburnated area may extend as much as one and one-half inch into each fragment, and osteogenesis is greatly impaired, so much so that bone fragments ideally contacted and perfectly immobilized by external splints or internal metal devices, do not unite. In other words, it is clear that the surgical problem which presents itself is not the securing of better fixation or more close approximation of the fragment ends by bone removal and freshening, but the furnishing of an efficient internal splint and at the same time supplying a bone-growing and osteoconduction element which spans these scler-

osed areas and is closely and favorably contacted with the healthy vascular osteogenetic bone in each fragment beyond the eburnated area.

In fresh fractures the most desirable time for operation is from five to fifteen days after the injury. This allows time for the absorption of the exudates in the region of the fracture and for improvement in the drainage of the lymph system; also the ends of the bone have become covered with fibrin and have gone through the process preparatory to repair. All conditions are favorable for operating, and by this time the usual means of reduction and fixation of the fractures have been tried, and their failure to accomplish the desired results demonstrates the necessity for operation. A longer delay is not desirable, for nature's efforts and the appearance of contractures increase the difficulties of the operative reduction. Albee says that the inlay graft affords an ideal fixation for either the fresh or the ununited fracture of the bone. He has used a bone graft shaped in the form of a peg, by his bone-cutting instruments, to fix the fracture of the neck of the femur, thus avoiding using the metal nails. It would seem that bone-grafting more nearly fills the requirement of nature in the healing of fractures than any other method of operating, and it will doubtless be used more and more in the future. It has the advantage also of being able to stand some infection, and yet afford a perfect result. Autogenous grafts have been used successfully in infected fields. Law has shown this in his work at the University of Minnesota, and his results have been published recently.

Metallic or foreign substances are contraindicated in infected fields. Lane's success is said to be due to his perfect aseptic technic. I believe every surgeon who is doing any bone work should look to the bone graft as affording the greatest possibilities for bone repair that we possess, and I am inclined to think that Lane bone plates and foreign materials will be used less and less in the future, except in specially selected cases, as surgeons become acquainted with the technic of bone-grafting and its possibilities and uses.

It is my practice to give a general anesthesia to practically all patients with fractures. Radiographs are taken at two angles, usually an anteroposterior view and a lateral view. After reduction x-rays are again taken and during treatment when it is necessary to check up the position of the fragments. Everyone of course recog-

nizes the great value of the *x*-ray in the study of fractures. It is a matter of conscience, and of protection also, with the surgeon. Many cases of injury that are in the doubtful class are cleared up by the *x*-ray. Fractures of small bones, such as the wrist bones, and cracks and splits in bones, are discovered, which otherwise would escape our observation. The *x*-ray has been a wonderful means of assisting our study and increasing our knowledge of fractures, but it has also been a means of holding us more responsible. As Lemon says, "The laity expects of us anatomic restoration of broken parts; from the medicolegal standpoint any other result evokes a smile of compassion from the legal fraternity. Either we must have a cabinet-maker's joint, as shown by the radiograph, or we have laid the foundation for a malpractice suit." Now, as a matter of fact, the criterion of successful treatment is, or should be, function, and that cannot be shown on an *x*-ray plate. If the plane of the articular surfaces is maintained in its normal relation, and the axes of the fragments are parallel, a perfect function may be secured with a bad-looking radiograph. In a fracture the *x*-ray has tended to concentrate our attention too much upon the bone, whereas in reality we are caring for an injured limb in which the soft tissue may require more care and attention than the bone, in order to get good function. It is my belief, which I think is in accord with the teachings of men like Murphy and other great surgeons, that in case of fractures near joints an accurate apposition of the fragments under anesthesia should be absolutely secured and the plane of the joint maintained. If the fragments cannot be placed in apposition and maintained there, they should then be treated by the open method or the Murphy method of nailing, so that, once they have been placed in apposition, they should be kept absolutely immobilized without fear of ankylosis so far as the immobilization is concerned, and they should be kept immobilized long enough. In fact, this is the best way to prevent ankylosis, for, if we do not get perfect apposition and if we do not maintain the fragments immobile, we increase callus-formation and, consequently, thickening of all the tissues with a resulting possible ankylosis and bad functional results, and we do not give the ligaments and tendons time and opportunity from perfect and long immobilization to heal. It is a question in many of these joint fractures whether tendons and ligaments and capsules are

not often more seriously injured than the bones, and whether or not in recovery that the poor functional result is not more often due to faulty healing of these torn structures than of the bones themselves. It is also a question whether or not in the future there will not be more open treatment and suturing of the torn joint structures in cases of fracture than there have been in the past. In the case of fracture in the shaft I do not think it is so necessary to get perfect apposition, and I believe more motion is allowable. It has been the practice of the Germans in connection with the use of plaster casts to get their patients up early and walking. This admits of some irritation and motion at the ends of the fragments, and insures quicker union, besides maintaining a healthier condition in the patient. Surgical patients are now allowed out of bed much sooner than formerly. We can do the same with fracture cases, especially of the shafts of bones.

In the use of plaster bandages we all doubtless realize the danger of too tight a circular bandage, producing Volkmann's contracture or an ischemic myositis. Dr. Murphy says that he is operating on more and more of these contractures, due, as he says, to too tight a plaster circular bandage, or splints applied too tightly, the damage being done in the first forty-eight hours. He calls it the surgeon's lesion. If this is truly a surgeon's lesion, we should be careful to avoid it by any constricting bandage or splint, both for the sake of the patient and to relieve ourselves of a possible embarrassing position. We should remember that we must not try to get reduction by tight splints. If we have not gotten reduction of the fragments we must not commit another and worse error by attempting to reduce them with tight splints or plaster casts.

It is my rule to limit the operative treatment of fractures to those in which I find after careful efforts that I cannot reduce the fragments or that there is a poor prospect of a good functional result. When I believe the indication clear for operative procedure, I do not hesitate to operate and my operative results have been very satisfactory. I, however, try to improve my bloodless methods, rather than to increase the number of my operative cases. In this connection I am reminded that Cotten says he thinks he can do things with splints. It might be well if everyone who deals with fractures would learn to do things with splints.

In compound fractures it is my practice simply to cover the fracture with sterile gauze, wiping

the skin with iodine, and placing the limb in a comfortable position with some splint, making no attempt at reduction until I am ready to take the patient to the operating-room. I prepare as for an abdominal operation, using rubber gloves. Under anesthesia reduction of the fracture is attempted. Nothing but sterile instruments touches the bones or wounds. The wound is thoroughly wiped out with iodine or alcohol and sometimes ether, removing all dirt, cutting away any badly lacerated and contused tissues, and splitting open any pockets that might collect fluids. No foreign material, such as bone plates, is used. In regard to the use of Lane bone plates in compound fractures, it is contrary to Lane's own teaching and also to Murphy's to use them, although in the Panama Canal Zone and other places favorable results have been reported from their use. It is remarkable how well compound fractures will do treated in this manner. A large percentage of them escape serious infection. Just recently I had such a case. A woodsman was brought to the hospital after traveling thirty miles in a sleigh in cold weather

with a compound fracture of the tibia and fibula, the tibia protruding two inches and into the dirty clothing. Treated as described above, the wound healed without a particle of trouble.

In treating compound fractures one should be as careful and as surgically clean as he would be in preparing for any major operation. No rough wiping, scrubbing, or irrigation should be done. One should strive not to add in any way to the traumatism the tissues have already received, and thereby increase their chances for infection.

It is not within the limits of this paper to take up the treatment of each special fracture, any one of which could well be the basis of a single paper in itself.

In conclusion, I would say that the successful management of a fracture requires sound judgment, constant attention to details, a knowledge of many methods, and the selection of the one which in the individual case will lead to a restoration of the form and function of the injured limb in the shortest time possible and with the least danger and inconvenience to the patient.

THE ELEMENTS OF PSYCHIATRY: WHAT THE BUSY PRACTITIONER SHOULD KNOW ABOUT MENTAL DISEASES*

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One of our most prominent authorities opens his text-book with this statement, "Psychiatry is a branch of general medicine." It is my belief that not one of the gentlemen present will attempt to deny this; and yet how many practitioners will pass by cases of mental disease with the smallest amount of consideration compatible with their dignity! It is not to be expected that the busy physician shall be an expert alienist, as this branch of medicine is, at most, a minor division of the great subject you are endeavoring to handle. Many of you, no doubt, graduated without ever having listened to a lecture on the subject. I had eight lectures of one hour each in my senior year, and I can frankly explain my ability to pass my final examination in the subject by the leniency of my preceptor alone.

The picture today is decidedly different. Not

one Class A University in the country graduates a candidate without a fair preparation in this branch. It is true that many promptly forget what they have learned, but a few of us are compelled to dig deeper into the subject; and, I doubt not, most of you have come in contact with at least several cases where you honestly wished that you knew considerably more than you do along these lines. (I offer sincere apologies to any present who feel abused by this remark.) We must realize that the insane class constitute a rather large factor in the medical sciences of today, if we momentarily stop to consider the enormous number of insane in these glorious United States. Think of there being upwards of 33,000 known insane persons in New York state alone. The last statistics to which I had access gave 1 insane to each 284 of our population. The exact population of our own State institution is not known to me, but I believe there were upwards of 800 patients there,

*Read at the 35th annual meeting of the South Dakota State Medical Association at Aberdeen, May 23 and 24, 1916.

according to a rather recent report, and it seems to me that I have read of attempted legislation to obtain an institution at Watertown of 1,000 capacity. Dr. Adams, if present, can correct any misstatement here. Barring all of this, there is no question that insanity is increasing rapidly in this country, whether the increase be real or apparent; and steps must be taken to combat this increase. What step is of more importance than that we, as physicians, should learn to recognize the condition in its incipency, in order that the proper steps may be taken towards placing those afflicted where they may be promptly restored, thereby diminishing the rapidly increasing tax from this source, as well as converting these people into wage earners and useful citizens, instead of a burden to themselves and us. Stop for a moment and consider what it means to a wife, mother, or other relative to have a beloved relative stricken with this fell affliction; think of the heart pangs, the grief, and oftentimes the mourning that follow. Now, contrast this with the overwhelming joy of these same relatives upon the restoration to complete health and sanity of that beloved one. Provided this malady misses your own family, you might be inclined to ask, "What am I to do about it?" I shall try to supply the answer as it occurs to me.

It is the duty—and should be the pleasure—of each one of you to so familiarize yourself with the elementary manifestations of this dread scourge, that you may be able to recognize it in its infancy and then take the necessary steps to place the afflicted one in such a place and under such conditions that he or she may be promptly cured. It is to the shame of our profession that many cases have gone unrecognized or been dallied with, for various reasons, which I shall not mention at this time, that when they were finally placed under proper surroundings "it was too late," and these cases end their days in sanatoria or asylums, whereas they might have been saved. I shall not discuss in this paper the relative merits of home treatment as opposed to institutional treatment, except to make the broad statement that as the insanity developed under home conditions, a complete change of surroundings, such as is afforded by many asylums and sanatoria, may be our leading and best weapon in combating this disease. If my paper serves no other purpose, I trust it shall at least make each one of you feel it your duty

to examine your suspected case carefully, and remember that delay is oftentimes fatal to chances of recovery. If in doubt as to your diagnosis, at least give the patient the benefit of the doubt, and secure competent consultation. Insanity is often cured, let us say for our present purposes, in twenty-five per cent of the cases, and this percentage will be materially increased when we physicians learn to recognize it promptly, and begin our cure before irreparable damage is done to that most delicate organ, the brain.

"What is insanity?" you ask. The definitions I have heard and read are multitudinous. I shall endeavor to give you the best answer I know. Insanity is a disease of the mind, produced by a disease of the brain, which manifests itself by such changes in thought, feeling, or action as to place the afflicted individual out of harmony with his surroundings. It is a mal-adjustment.

The causes of mental disorders are of two general classes, predisposing and exciting, the former operating to prepare the soil for a true crop of mental symptoms, the latter being the immediately direct factor in the maturation of the same.

The predisposing causes may be sub-divided into the individual, consisting of inherited and acquired predisposition, and the general, consisting of such factors as age, physiological epochs, sex, civil condition, climate and civilization.

The exciting causes may be physical, consisting of toxines, either exogenous or endogenous, traumata, infections, exhaustions, or bodily disease, or mental, such as fright or worry.

The average percentage in which inherited predisposition is found is between 60 and 70 per cent, various authorities giving it from 30 to 90 per cent. It is not necessary that the parent be afflicted with a frank psychosis, in order that the offspring inherit this predisposition. Various debilitating conditions, such as tuberculosis, alcoholism, especially at the time of conception, and syphilis are perhaps the most important conditions in the parent, aside from feeble-mindedness, which are apt to produce this predisposition in the offspring. Among others should be mentioned epilepsy, chorea, tic douloureux, migraine, nephritis and rheumatism.

For the development of the acquired predisposition, the three most important factors are alcohol, syphilis, and the toxic-exhaustive condi-

tion produced by tuberculosis. Also, a previous attack of insanity is often a predisposing cause of a subsequent attack.

Of the general predisposing causes we shall first consider age. There is a gradual increase of insanity up to the age of 40, and then a gradual decrease. Of course this is largely due to the fact that there are more people living at from thirty to forty than any other age, but then, too, it should be remembered that many of the exciting factors in the production of mental alienation are full-blown at this period. Of course, one should not expect a senile psychosis to develop in an adolescent; nor should one look for a puerperal insanity in a woman who has passed the climacteric; nor should we expect a precocious dementia to begin in the senium. A large number of our predisposed cases develop at such physiological epochs as puberty, adolescence, the puerperium, the menopause and the senium. We look for paresis in the third or fourth decades. Alzheimer's disease is to be found in the pre-senium.

As to the influence of sex: One might at first thought suppose that the female is more liable to develop mental disease by reason of the effects of menstruation, the puerperium or the climacteric; yet these causes are about offset by the more strenuous life of the male, together with a preponderance of alcoholism and syphilis in the latter. I often feel that gonorrhea has not received the full amount of blame to which it is entitled in the production of mental disease, especially in the male.

There is a trifle more than 50 per cent of mental disease in the single, leaving the balance to be divided between the married, divorced, widowed and unknown classes.

The effect of climate is operable indirectly by the exhaustion produced by tropical diseases, such as malaria, yellow fever, pellagra, uncinariasis, etc.

Civilization is a very prominent factor and the greater the degree of civilization with its complications in the struggle for existence the more apt are we to find mental breakdowns. This accounts for the greater prevalence of mental disease in urban than in rural life.

We now have reached the exciting causes which, operating on this predisposed (prepared) soil, are necessary to throw the balance toward the side of insanity.

First the toxic causes: These may be en-

dogenous (coming from within the body), such as those which originate in the gastro-intestinal tract, chronic nephritis, myxedema, goiter, acromegaly, and other conditions produced by perverted function, hypo- or hyper-function of the endocrinous glands; and exogenous (coming from without the body), of which the most important is alcohol, which is the cause of at least 15 to 20 per cent of the cases of insanity in the male sex. Also morphine, heroin, cocaine, atropine, lead, mercury, and the toxins of such diseases as syphilis, gonorrhea, tuberculosis, typhoid fever, yellow fever, malaria, grip, etc.

Then we have the traumatic causes, either direct or indirect injuries to the head.

Next we find exhaustion from prolonged physical or mental strain, or both, from chronic diseases, or from acute conditions following fever, or the result of loss of considerable blood. Bodily diseases, other than toxic conditions, may cause mental disease by disturbances of circulation, reflex irritation, disturbances of nutrition, and exhaustion. Such are cardiac disease, with broken compensation, intestinal parasites, epilepsy, hysteria and chorea.

Of the mental causes we may mention sudden shock, fright, or horror, as being the exciting factors of sudden mental breakdowns. Worry, anxiety, etc., operating over a much longer period of time, are also causative factors.

I shall now merely mention, for fear of trespassing too much on your time and good nature, the more important types of mental disease with their leading symptoms, and close with a few remarks on treatment. I shall follow more or less closely the Kraepelinian classification, and shall consider them in the following order:

1. Idiocy and imbecility.
2. Dementia precox.
3. Manic-depressive insanity.
4. Paresis.
5. Paranoia.
6. Involution melancholia.
7. Senile psychoses.
8. Infection—exhaustion psychoses.
9. Toxic psychoses.
10. Psychoses associated with organic disease and injury of the brain.
11. Borderland and episodic states.

1. *Idiocy and Imbecility.*—*a.* The idiocy may be of the amaurotic family type, which is almost exclusively found among Jewish children, and is characterized by paralysis of all four extremi-

ties and progressive blindness in addition to the idiocy.

b. Thyrogenous idiocy, due to cretinism or myxedema, in which we find the thyroid symptoms, together with those of idiocy.

c. Hydrocephalic idiocy, in which we have the signs of hydrocephalus, as well as those of idiocy.

d. Microcephalic idiocy, differing but little from the preceding, except as regards the size of the head.

e. Paralytic idiocy, in which we have idiocy associated with paralysis, either monoplegias or diplegias. These are due to true porencephalus or false porencephalus, and the individual symptoms depend upon the location of the lesion.

f. Epileptic idiocy, or idiocy associated with epilepsy.

g. Traumatic idiocy, or idiocy the result of injury.

h. Sensorial idiocy, or idiocy by deprivation of two or more of the principal senses.

i. Inflammatory idiocy, or that form following inflammations of the brain and meninges, consequent upon infectious diseases, as the exanthemata, typhoid, rheumatism, pneumonia, etc.

j. Sclerotic idiocy, due to tubular sclerosis.

k. Idiots-savants. Rare cases of idiocy with some special genius, due to the over-development of a certain faculty.

Generally speaking, the symptoms upon which we would make a diagnosis are, a stupid and vacant look, prolonged and unprovoked crying (in infants), under-development of one or more of the faculties, inability to walk or talk, mental apathy or, in some cases, excitability, rhythmic movements, usually a voracious appetite, gulping of large mouthfuls of food without chewing, untidy habits, and masturbation, especially when disturbed. As we get a higher degree of mental development, these cases become known as imbeciles. Attempts have been made to subdivide this class into cases of a low order of development and of a high order of development; and they have been called low-grade and high-grade imbeciles. Some authorities have endeavored to make another subdivision of ideo-imbeciles, persons whom they believe to be too intelligent to class as idiots, and yet not intelligent enough to call imbeciles.

As we approach closer to the normal mental development we find two classes of a higher

degree of mental development than the imbeciles. These are known as the morons and the feeble-minded. For our purposes, I shall endeavor to picture the symptoms of an imbecile. They differ from the idiot in that they talk. Their ideas are few and superficial; they cannot keep up with the normal children in school; they are coarse and brutal, often mischievous and cruel, and always irritated, and will fight upon slight provocation. Their habits are usually bad, but they are seldom filthy, and their conduct is less animal-like than that of the idiots.

2. *Dementia Preco.x.*—This is essentially a disease of the period of puberty and adolescence, and in most instances the heredity is bad. It is in reality a dissociation between the intellectual and emotional reactions. There are four forms.

a. Heboidophrenia, or simple dementia, in which the earliest symptom is a lack of interest in self and surroundings. They become listless, apathetic, lazy, tired out and fail to acquire knowledge. This is associated with insomnia and headaches, and sometimes hysteriform attacks. Transitory delusions and fleeting hallucinations may occur and are usually disagreeable. Many hoboos, criminals, prostitutes and cranks spring from this class.

b. Hebephrenia, in which we have a more pronounced combination of symptoms than above described, but with a more acute onset; and the delusions and hallucinations are more prominent. The delusions are changeable, bizarre, silly. Most wonderful stories are told by these cases, without any display of emotion. Thought is loosely connected. There is a poverty of ideas. They grimace, laugh, talk, are quite suggestible, assume theatrical poses and attitudes, and there is a certain amount of muscular tension. They are depressed and excited episodically. They present a confusion of thought and incoherence. Their conversation is a true word-salad, and they coin many words (neologisms) from what Wernicke terms word-clang.

c. Catatonia, usually of slow onset, though it may develop suddenly. The distinctive features of this type occur in two irregularly alternating stages, the catatonic stupor and the catatonic excitement.

In the stuporous phase we find the stupor, negativism and muscular tension. This patient will stand, sit, or lie in a very constrained position, paying no attention to surroundings, not

responding to questions or commands, absolutely mute, suppresses the emunctories, and reacts diametrically opposite to what is requested. Muscular tension is pronounced. Stiff positions, grimaces, schnauzkrampf, are prominent features. In other cases, we have the opposite condition of cerea flexibilitas, suggestibility, or command automatism, echolalia, and echopraxis.

In the catatonic excitement we have a greatly different picture. The patient is constantly talking, shouting, throwing himself about, presenting stereotyped movements, hysteriform attacks, and attitudinizing. Verbigeration is common; also rhyming. Stereotypes of speech and perseveration are common. Impulsive acts are characteristic, and mannerisms frequent. Inequalities of the pupils, mydriasis, or hippus sometimes occur. Tendon reflexes are exaggerated. Cutaneous sensibility is lowered, and cold, cyanosed extremities frequent. There are loss of weight, increased saliva and sweat, with diminished urine and constipation.

d. Paranoid forms: Here we find delusions of persecution or grandeur, somewhat systematized and possibly auditory hallucinations. Add to this mild evidences of dementia, some depression, desire to seclusion and inability to consistently apply the mind to any definite end. The delusions are loosely organized, fantastic, unstable, and hallucinations are fleeting. In addition, we find muscular tension, stereotypy, automatism, mannerisms, verbigeration, suggestibility and negativism. Some of these cases present the most fantastic and grandiose delusions.

3. *Manic-depressive Insanity.*—Manic-depressive insanity may occur purely as a maniacal condition or purely as a depressed condition, or as a mixture. The diagnostic symptoms of the manic form are psychomotor hyperactivity (shown by incessant talking, shouting, yelling, rushing about), emotional exaltation (everything grandiose, lovely, etc.), flight of ideas (jumping in a very facile manner from one subject to another), lack of goal ideas, suggestibility, disorientation. The depressed form is characterized by difficulty of thought, psychomotor retardation, emotional depression, speaks but little and then slowly and in very low tones or whispers, sits, stands or lies wherever placed, apparently too abstracted to move, head down on chest, woebegone expression, self-accusatory ideas, hypochondriacal ideas, and possibly hallu-

cinations. In the mixed states we may have any combinations of the symptoms of the two states described above.

4. *Paresis.*—This is a meningocortical encephalitis, due to the presence of the spirocheta pallida of Schaudinn, and occurs most often in the male sex, being comparatively rare among females, in the fourth and fifth decades, though juvenile paresis, an hereditary condition, does occur.

The diagnostic symptoms are the Argyll-Robertson pupil, loss of the consensual reflex, loss of the sympathetic reflex, exaggerated or lost knee-jerks, glossolabial tremors, Romberg symptom, ataxic gait, tremors of fingers, epileptic or apoplectic seizures, loss of sphincteric control, and finally a bed-ridden state on the physical side.

The mental symptoms vary with the type, which may be demented, excited, agitated, depressed, or paranoid, and with the stage of the disease. In the early stages we find a gradual change of character followed by a certain and absolute dementia, provided the disease runs its full course. He first fails to apply himself to his work, memory becomes impaired, drinks to excess, indulges in excessive venery without shame, shows poor judgment, makes enormous purchases, risks large sums of money, often on hair-brained schemes, becomes careless of his appearance, becomes excited with many of the most grandiose delusions and hallucinations. In the later stages the patient quiets down to an absolute dementia, and finally dies, usually in eighteen to twenty-four months after the onset, of exhaustion, hypostatic pneumonia, decubitus, or epileptic or apoplectic seizures.

5. *Paranoia.*—This is a comparatively rare condition, characterized by systematized delusions of persecution and usually consists of three stages. First the hypochondriacal stage with its introspection, uncommunicability, unusual feelings, headaches, dizziness, insomnia, restlessness, nervousness, and hypochondriacal ideas, associated with emotional depression. Second, the stage of persecution, with the efflorescence of the delusion of persecution, accompanied by hallucinations of hearing. It is at this stage that the patient will keep to himself, dodge his imaginary persecutors, oftentimes taking long, expensive trips to escape, only to find that emissaries of his enemies are there awaiting him, whereupon he flees and flees, with exactly the

same result, when his attitude changes, and, instead of fleeing, he will attempt to defend himself, and, later, will take the initiative and assault his imaginary tormentors. These persons are always after some prominent personage, whom they believe to be the instigators of their persecution, and they pay but small attention to the underlings. They constitute the most dangerous class of lunatics. They are most prolific writers, and a certain class of them will carry on many legal affairs (litigious paranoiacs). They are extremely socialistic in their tendencies, and have innumerable schemes for remedying existing evils. They soon develop the third stage, that of transformation of personality, and become the most important personages in the world, in their own estimation, looking upon the remainder of humanity with the utmost contempt. They believe they are of noble descent or even more recent Christs sent here for the specific purpose of converting earth into heaven. They present retrospective explanatory delusions and falsifications of memory in order to explain the incongruities of their existing condition with their claims. Finally, after years of this active life, they begin to show intellectual impairment and later become demented and inactive.

6. *Involution Melancholia*.—This is a psychosis of the involutional period of life, characterized by great emotional depression, apprehension, and anxiety. It begins with a headache, sense of fullness in the head, vertigo, anorexia, irritability, insomnia, and mental insufficiency. Next, they develop a morbid fear of impending danger. Then they will tell you that they have committed the unpardonable sin and that their souls are lost and they are doomed to eternal damnation and torture. They will walk around in anguish, wringing their hands, tearing their hair, groaning and moaning, asking assistance from everyone, but immediately rejecting it, and calling on the Lord to help them. They are hypochondriacal, and liable to commit suicide.

7. *Senile Psychoses*.—These usually occur after the age of sixty. The patient presents the usual physical signs of senility, as sparse gray hair or baldness, loss of teeth, atrophy of the lower jaw, arcus senilis, wrinkled skin, loss of subcutaneous fat, and arteriosclerosis. On the mental side, we find loss of memory for recent events, marked egotism with lack of regard for others' wants or feelings, and general crankiness.

Later, we find lack of initiative, failure of judgment, and loss of comprehension. Delusions of a persecutory character may develop, and possibly hallucinations, also. Emotionally, they are dull or irritable. They wander aimlessly around, are unable to properly dress themselves, get into the wrong bed, and do the most absurd things. This is the true simple dementia of the senium. We may also have a paranoid state, a confusion, an excitement, or a depression.

8. *Infection-exhaustion Psychoses*.—In these conditions of pre-febrile, febrile, post-febrile, and exhaustion psychoses, associated with the infectious diseases, loss of blood, shock, prolonged convalescence, etc., the most prominent symptoms are the mental confusion and delirium. Headaches, irritability, restlessness, disturbing dreams, hypnapagogic hallucinations, jactitation, and, in fatal cases, dulling of consciousness, coma, and death. In favorable cases, the confusion and disorientation, together with the hallucinations, gradually sink into insignificance, and subside, leaving the patient in a condition for a protracted convalescence. Frequently there are periods of lucidity during the course of the delirium.

9. *The Toxic Psychoses*.—These are endogenous or exogenous. Of the former, I shall mention, briefly, the confusion of uremia, the depression of diabetes, the confusion and sometimes delirium of gastro-intestinal conditions, the apathetic dementia of myxedema, the idiocy of cretinism, the apprehensive depression of exophthalmic goiter, the confusion of Sydenham's chorea, the dementia of Huntington's chorea, the mental enfeeblement of paralysis agitans and multiple sclerosis, the acute delirium of pellagra, and the depressions of the various forms of heart disease.

Of the exogenous toxic psychoses, those produced by alcohol are by far the most common and most important. The psychosis may be manifested as a simple drunkenness initiated by an excitement with flight of ideas, pressure of activity, loss of moral tone and of voluntary attention, followed by muscular incoördination, unsteady gait and thick speech, diplopia, tinnitus aurium, and blunted sensibilities. The euphoric condition is sometimes replaced by a sad, depressed, lachrymose mood. If the amount of poison ingested is sufficient, we shall then find a condition of alcoholic coma, with which most of us are entirely familiar, for it may be mani-

fested as a pathological drunkenness, in which the symptoms are much more severe and delusions of persecution and hallucinations dominate the field of consciousness. The excitement may amount to maniacal frenzy, or the depression may be so profound as to lead to attempts at suicide. Epileptiform or hysteriform seizures may complicate. Amnesia for the period of profound intoxication is the rule. Or we may have delirium tremens, ushered in with nervousness, coated tongue, anorexia, restlessness, tremulousness, and insomnia. This rapidly increases until we get the characteristic tremor, delirium, and albuminuria of the full-blown attack. The delirium is an acute hallucinatory confusion. Believing that all of us are more or less familiar with this condition, I shall proceed to the next type for the sake of brevity.

This is chronic alcoholism, in which we find tremor, gastric catarrh, arteriosclerosis, albuminuria, obtunded intellect, poor judgment, blunted morals, delusions of marital infidelity, and jealousy, the patient gradually becoming permanently demented. Or we may have an alcoholic pseudoparesis with a true expansive delirium, ataxia, speech defects, tremors, pupillary anomalies, muscular weakness, and epileptiform attacks. Or we may have an alcoholic epilepsy, which can only be differentiated from true epilepsy by reason of the fact that the convulsions cease upon withdrawal of the alcohol. Or we may have an alcoholic hallucinosis, which is characterized by hallucinations, especially auditory hallucinations, thereby contrasting strongly with delirium tremens, in which the visual hallucinations predominate. Delusions of persecution, somewhat systematized, with prominent sexual coloring are present. Or we may have an alcoholic pseudoparanoia, with a paranoid state, the delusion of marital infidelity and hallucinations, the latter being less prominent than in the last type cited. Or we may have a Korsakow's psychosis, in which we have amnesia, both anterograde and retrograde, disorientation for time and place, falsifications of memory, especially retrograde, fabrications, delirious experiences, suggestion confabulations. In addition, we find all the signs of a polyneuritis with wrist- and foot-drop. This same psychosis may be produced by other poisons than alcohol, such as typhus, tuberculosis, diabetes, influenza and the metallic poisons, and the

syndrome sometimes occurs in paresis, and senility. Or we may find trance, automatism, double consciousness, spontaneous somnambulism, the result of alcohol, all followed by amnesia.

Owing to the length of this paper, I shall mention that other exogenous toxic psychoses result from opium and its alkaloids, cocaine, chloral, cannabis indica (hashish), the various soporifics, coal tar preparations, belladonna, hyoscyamus, quinine, salicylic acid, and preparations of lead, arsenic, mercury, and the bromides. In these we have a dream-like delirium, with some tendency toward confabulation.

10. *Psychoses Associated with Organic Diseases and Injury of the Brain.*—The epilepsies in which we find depressions, excitement, confusions, and stupors, all of which are transitory and almost invariably terminate sooner or later in epileptic dementia. Tumors, with change of character, childishness, emotional instability, irritability, mental hebetude, and some clouding of consciousness. The physical symptoms do not concern us in this paper. Syphilis, in which an acute delirium may occur, followed by dementia. Apoplexy, in which the picture is usually one of progressive dementia. Arteriosclerosis with irritability, forgetfulness, hypochondriacal or paranoid ideas, and sometimes epileptiform seizures and focal symptoms, finally followed by profound dementia. Traumatism, in which the most frequent sequelæ are hysteria and neurasthenia. Dementia precox, maniac-depressive psychoses, and paresis may follow an injury.

As I have trespassed too much on your time and patience already, I shall reserve my remarks on the borderland and episodic states for a possible future paper. Neurasthenia, psychasthenia, hysteria, compulsion neuroses, anxiety neuroses, and the psychopathic constitution cannot be covered in a few words.

In closing, I desire to simply mention a few of our resources. First, a change of environment, then constant attendance, good nursing, proper food, administered artificially, when necessary, hydrotherapy (including wet packs, needle, rain, fan, spray, jet, spinal and Scotch douches, sitz and full baths, and continuous baths), medication as required, psychotherapy and psychoanalysis.

Accept my sincere thanks for your consideration and attention.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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K. O. KLEIN, Associate Publisher

Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

JANUARY 1, 1917

STATE-WIDE PUBLIC HEALTH

Not only is the City of Minneapolis active in reorganizing its Health Department, but so is the State of Minnesota. Governor Burnquist has recently appointed a Commission to study State health matters. The Commission is composed of the following members: Dr. W. L. Beebe, of the Beebe Laboratories; Dr. A. T. Laird, Superintendent of Nopeming Sanatorium; Dr. E. P. Lyon, Dean of the State Medical School; Dr. I. J. Murphy; Hon. L. E. Potter, State Senator, Springfield, Minn.; Hon. C. G. Schulz, Superintendent of the State Department of Education; Hon. C. J. Swendsen, Chairman of the State Board of Control; Dr. L. B. Wilson, of the Mayo Clinic; and Hon. W. F. Houk, State Labor Commissioner.

None of these members have had any actual experience in the practical side of public health, with perhaps one or two exceptions, the physicians, who are presumably somewhat familiar with public health problems. This Commission has been organized, and has met and has heard from various men representing State boards as to what should be done with public health activities. They have completed their report, which is to be presented to the Governor, and through him presumably to the legislature.

This Commission has apparently decided that the State Board of Health is inefficient; and they propose a reorganization thereof. Then, too, the Efficiency and Economy Commission are attempting to reorganize the government of the State of Minnesota, and they have fallen in line with the suggestions made by this new health committee, and have decided to reorganize the State Board of Health. The whole thing looks like a political project, and, if this is true, the State Board of Health will be a political body. These commissioners have suggested that the State Board be reduced to five members, instead of nine members, as at present, and that the executive officer shall be appointed by the Governor. In their anxiety the Minnesota Public Health Commission have suggested that the entire country be combed for a suitable man to take charge of public health work in Minnesota,—a rather large job for one man! The result may be, but we hope not, that politics will interfere with public health. Physicians all over the state will deplore any attempt of this kind, particularly when recommendations are made by men who are outside of the field of public health, that is, men who are not thoroughly familiar with field-work and with public health problems in general.

Governments and boards cannot be overturned without passing through an experimental stage; and it seems rather hazardous that the State of Minnesota and its public health work should be reorganized without careful and thorough study. No commission composed of laymen, in part, and physicians can possibly give this matter sufficiently serious consideration at a few brief meetings, particularly when the motive behind the situation is an effort to oust a public official. That makes it political beyond question, and therein the danger lies. This new Commission did not even know, after its first session, that a survey had been made of the State of Minnesota by a United States public health worker, Dr. Fox. This in itself shows the lack of consideration, the lack of consultation, and the indifference to existing State boards and their previous work.

The charge that the Minnesota State Board of Health has been inefficient is absurd, particularly as Minnesota stands so high in the estimation of the United States Public Health Service and of all other public health boards in the United States. Evidently no attempt has been made to investigate the working force of the State Board of Health, and without that investigation no report can be of great value. Both of the commis-

sions referred to above have kept the details of the reorganization of the health department from public gaze. Perhaps when it comes into the light it may be a very valuable contribution to the literature of the subject, or even may be of value to the health activities of the State; but, until it is brought out, we shall hesitate to look forward to anything particularly gratifying.

It would seem, too, that the reorganizations which have been going on at the University and have proved so troublesome would be a lesson to commissioners who attempt something that is beyond their knowledge, or, at least, beyond their experience.

PROBLEMS OF THE UNIVERSITY OF MINNESOTA

The troubles of the University do not seem to be lessened very much as time goes on. Judging from a recent deplorable statement in the *Minneapolis Journal*, in which Dean Johnston expressed himself very freely, there is an admission on the part of the University authorities recognizing that things are not going right; and perhaps it is fortunate, under the circumstances, that a change of administration is to take place. In fact, it may be the very thing that will put the University on a sound basis. There has been some regret expressed over President Vincent's resignation, but, on the whole, it is not a deplorable catastrophe. The probabilities are that at the coming meeting of the legislature a good many of the details of the University's management will come up before legislative committees; and, though the Regents will ask for more than five million dollars, it is quite likely that this sum will be cut down even too much. The hue and cry of the legislature will be for economy; and all the State institutions are going to get much less than they need, unless the legislature can be convinced that the amount demanded is needed for the necessary work of each institution.

At present the situation at the University seems to be controlled by three or four members of the Administrative Board and the Board of Regents. The selection of a new president is to be left in the hands of a small committee, which is probably a wise thing to do; but will they get a desirable man? One gratifying fact in connection with the University troubles is that the Alumni are receiving more consideration and respect than they have received for many years past; possibly because they have a good deal of inside information, and possibly on account of

their growing numbers the Administrative Board feels that it should grant many alumni requests.

The same old problems will come up again regarding the Medical School; and the Administrative Board will probably ask for a conference committee from the Minnesota State Medical Association, perhaps not an advisory committee, but a committee to make an impression. The fact, too, has come out that the request made by the University for an investigation and report by the Civic & Commerce Association has brought to light many things that were unknown before. The Civic & Commerce Association was rather inclined to endorse whatever was placed before it, but the physicians of the state became interested, and the Civic & Commerce Association's sub-committee was given possession of certain facts, and, as a result of the open conference with the Hennepin County Medical Society, the Civic & Commerce Association has made no report. In fact, after the meeting no report was wanted by the Administrative Board of the Medical School. They had made certain plans, and they propose to carry them out with great independence—if they can.

From many sources of information, it would seem that the University has been attempting to expand too largely and too rapidly. The plans are to increase the number of buildings, or at least the amount of floor space, without sufficient people to occupy such space; and it has been suggested before, and is suggested again, that the University has about all it can do with its present professors. What it needs is a plan which will bring out the best energies of the present force. It seems possible that this can be done if the proper attempt is made; and to gain greater efficiency and to meet its economic problems, the University will gain ground if it holds to what it has, and develops it to the highest degree possible. It will make more in the end, it will accomplish more with the State, and its educational propaganda will have more lasting force.

NEW PUBLIC HEALTH ACTIVITIES

Minneapolis has recently passed through a week of Health and Happiness, which has done an enormous amount of good from an educational point of view. It has called the attention of the public to the fact that public health is a very desirable thing; and to that end the people have been aroused to some very urgent local necessities. This is shown by the effort on the part of the physicians and laymen to reorganize and

rehabilitate the local health department of Minneapolis; and the main thing that they are endeavoring to accomplish is to take the whole situation away from disastrous political influences; in other words, to take it out of politics, and to keep it out. To that end a special committee, consisting of members of the School Board, the Board of Charities and Correction, and the City Council, has been appointed to study the subject and draft a bill. This committee consists of Mr. Harrington Beard and Cavour S. Langdon, representing the School Board; Dr. J. G. Cross, president of the Hennepin County Medical Society; Dr. Thomas B. Hartzell; C. F. Keys; George B. Leonard; E. P. Lyon, Dean of the Medical School; Wallace G. Nye; James G. Shearer, Mrs. Andreas Ueland; and Miss Edith Rockwood.

The object of the bill will be to obtain a closer relationship between the Health Department, City Hospitals, and the medical inspection department of the public schools. This can be accomplished if the City Council will permit this committee to formulate a feasible plan. Then, if the City Council is wise, it will turn the matter over to a committee outside of the City Council for completion. If this is done, and the Health Department of Minneapolis is given an absolute divorce from politics, we shall expect great things. It would at least be an interesting experiment to watch and to study as a future basis for health organizations.

When Dr. Young's report of his survey of Minneapolis is received it will be found to contain many interesting, though not flattering, statements.

MEDICAL INSPECTION OF STUDENTS

It would be difficult to believe, if the fact were not acknowledged and, *mirabile dictu*, defended, that a State university would permit a member of its faculty who is not a physician to examine the female genitalia of students under the claim, or pretense, of necessity in the conduct of his department of *education*. Such work has been conducted in the University of South Dakota by Professor W. Franklin Jones, head of the Department of Education in that institution. The practice was carried on also outside of the University, namely, following lectures given by Professor Jones for "women only."

A vigorous protest against such action was made by Dr. J. G. Parson, of Sioux Falls. At first no name was mentioned, but when the medi-

cal men before whom he spoke demanded, in their incredulity, the name of the professor, it was given.

Dr. Parsons has been chairman, for some years, of the Committee on Health and Public Instruction of the South Dakota State Medical Association, and has been a tireless worker in this line, having accomplished much good and having received the hearty thanks of the Association. He was the proper person to protest, and we are confident he did so in a temperate and wise manner. His attitude brought forth a letter from Professor Jones in which he made the following statements:

EDUCATIONAL CLINIC PRINCIPLES

1. Neither the Psychological nor the Educational Clinic can justify neglect to examine the genitalia in their relation to psychological or educational processes.

2. The educational significance of the genitalia is not the medical significance, and the Educational Clinician must have direct and first hand evidence.

3. We invite the co-operation of the dental and medical professions in the work of the Educational Clinic, but we can accept no school inspection as adequate if it ultimately omits the educational point of view.

Professor Jones received the degree of Ph.D. from the University of the City of New York, which attests his educational attainments and which gives him the right to be called "Doctor," and we presume he is so called. Whether intentional on his part, this title would lead many people to think him a doctor of medicine; and, of course, this would readily explain why women submitted to such an examination by him and also permitted their daughters to do so.

We are glad to be able to state that, so far as we know, no one impugns Professor Jones' motives in making such examinations; but it is exceedingly surprising that the men associated with him on the faculty of the University of South Dakota could not see that his enthusiasm has carried him into action which almost all thoughtful men will condemn, and which would soon produce serious consequences. We venture to say that it would be difficult to find a physician who would undertake such work in his capacity as school physician. Such examinations, when they cannot be avoided, belong to the family physician.

The Seventh District Medical Society of South Dakota issued to the public the following statement upon the subject:

To Whom It May Concern:

The members of the Sioux Falls District Medical Association present the following statement of their

position regarding the physical examinations which have been made by Professor W. Franklin Jones of the State University:

We consider the practice of making examinations of the female sexual organs as done by Professor Jones as entirely uncalled for and highly improper.

Professor Jones is not a physician, and even if he were, such examinations would be most injudicious, except in cases of urgent necessity in the legitimate practice of the profession. Making such examinations properly belongs only in the hands of competent physicians who have been licensed by the State after thorough examination as to their qualifications, and who are responsible to the State for their professional conduct.

We commend the position taken by our colleague, Dr. J. G. Parsons, who is the accredited representative of the South Dakota State Medical Association, in condemning the teaching and practice of Professor Jones in this respect.

We believe that the interests of education and public morals both demand that practice like that of Professor Jones be repudiated by the medical profession and other right minded citizens.

EDWIN L. PERKINS,
President.

NEWS ITEMS

Akeley is planning to establish a hospital.

Dr. D. F. Pennie, of Northfield, is located with Dr. Robert Graham, of Duluth.

All pupils and teachers in the schools of Little Falls were ordered vaccinated last month because of an epidemic of smallpox.

The United Church Hospital Association has received a bequest of \$500 as an endowment fund for Fairview Hospital of Minneapolis.

St. Olaf College at Northfield was closed for the holiday vacation a week early because of a case of scarlet fever in the men's dormitory.

The number of stations in Minnesota for the free distribution of diphtheria antitoxin supplied by the State will be nearly doubled very soon.

The State Health Laboratory at the University of South Dakota plans to distribute typhoid vaccine to the physicians of the state free of charge.

Dr. F. H. Gambell, of Fergus Falls, has been appointed Chairman of the Committee on Public Health of the Minnesota League of Municipalities.

An attempt will be made soon to obtain from the Minnesota legislature a law preventing the marriage of any person suffering from a communicable disease.

All physicians in the Federal public service have been ordered hereafter not to prescribe

heroin, and to return to headquarters all of the drug they have on hand.

Dr. Nels O. Sandven has returned from a two months' postgraduate course at the Chicago Polyclinic and has become associated with Dr. Iver S. Benson at Willmar.

At the meeting of the Grand Forks (N. D.) District Society Dr. John W. Todd, of the University of North Dakota, spoke on "The Relation between the Mind and the Body."

A state commission to revise state laws for children may recommend to the Minnesota legislature the repeal of the law that prohibits physicians from giving advice on the subject of birth control.

The Swedish Hospital of Minneapolis has received a legacy from the estate of Mrs. Maria Johnson, who died in Minneapolis in November. The money will be used for the equipment of a children's ward.

The Winona County Medical Society proposes this year to invite specialists to discuss with its members subjects on which the general physician needs information. Instead of a long paper there will be a long discussion at each meeting.

The University of Minnesota will appoint a professor of public health if it receives sufficient funds from the State this year. Such a professor would give instruction to all students on the care of their health and to medical students preparing to take up public health work.

Dr. Fred H. Albee, of New York, in an address before the Western Surgical Association, said that at the outbreak of the European war there was a great dearth of surgical material and instruments. His statements emphasized the importance and timeliness of Dr. Little's presidential address before the Minnesota State Medical Association.

At the annual meeting of the Red River Valley Medical Society, held last month at Crookston, the following officers were elected: President, Dr. J. F. Norman, Crookston; vice-president, Dr. H. W. Frolich, Thief River Falls; secretary-treasurer, Dr. Ralph Kirsch, Crookston; delegate, Dr. G. S. Wattam, Warren; alternate, Dr. H. H. Hodgson, Crookston.

The Western Surgical Association honored the Twin Cities by holding their twenty-sixth annual meeting in St. Paul last month. The elegant and spacious new Minnesota Club building furnished an ideal meeting hall, and the hospitality of both St. Paul and its famous Club was

unbounded. The meeting was one of the best held by the Association in the past quarter of a century; and this means much because its membership includes almost all the prominent surgeons of the West. The following were elected officers for 1917: President, Dr. Leonard Freeman, Denver; vice-president, Dr. Joseph Ransohoff, Cincinnati; secretary-treasurer, Dr. Arthur T. Mann, Minneapolis. The 1917 meeting will be held in Omaha.

The Soo Surgical Society held its tenth annual meeting in Minneapolis last month with practically all of its members present. The papers were of an unusually high order of merit, were listened to attentively, and discussed freely. Two days of strenuous work were given to the reading and discussion of papers and to attendance on clinics. The banquet was a delightful affair, and was attended by officers of the Soo Line, including President Pennington. This society is doing very high grade educational work, profitable to both the railroad and the public. The officers for 1917 are Dr. John M. Dodson, Chicago, president; Dr. Albert J. Pullen, North Fond du Lac, Wis., vice-president; Dr. John H. Rishmiller, Minneapolis, secretary-treasurer.

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An F. A. Hardy refraction set in excellent condition. Address 436, care of this office.

NORTH DAKOTA PRACTICE FOR SALE

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LOCUM TENENS WANTED

I desire some one to take my place in a small Minnesota town for two months. Will pay \$125 a month and furnish room. Address 443, care of this office.

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An eye, ear, nose, and throat man and a general practitioner desire a competent surgeon to become associated with them in an outlying district of Minneapolis. Address 438, care of this office.

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A complete set of 11 volumes of Messages and Papers of Our Presidents up to and including Taft's administration. For further particulars address Dr. Wm. Friesleben, Sauk Rapids, Minn.

OFFICES FOR RENT

A suite of 5 rooms, artistically arranged and decorated, suitable for a physician or dentist, will be for rent in the Essex Building, Nicollet and Tenth Street, shortly after Jan. 1. Rent, \$35.00. Address 437, care of this office.

ASSOCIATION WANTED

A physician and surgeon of ten years' experience wishes to associate either part or full time with an older man in Minneapolis. Strictly ethical and good worker. Address 440, care of this office.

BOOKS AND INSTRUMENTS FOR SALE

The medical library, consisting of 200 volumes, and a collection of surgical instruments belonging to the late Dr. J. B. Gould, of Minneapolis, are being disposed of and may be seen at 3217 Nicollet Ave. N. W. Phone, South 383.

LOCUM TENENCY WANTED

By 1914 graduate; eighteen months' internship at City and County Hospital, St. Paul. Can give best of references from men I have worked for. Can begin work at once for any length of time; prefer small town with little or no competition. Address 433, care of this office.

MISSIONARY HOSPITAL WORK IN INDIA

A qualified medical man required who is in sympathy with religious work is wanted. Passage paid, and a small monthly allowance made. Three years agreement. Apply, sending copies of testimonials, to Commissioner Thomas Estill, Salvation Army Headquarters, 108 N. Dearborn Street, Chicago.

A GOOD CALIFORNIA PRACTICE TO EXCHANGE FOR ONE IN THE MIDDLE WEST

An eye, ear, nose, and throat specialist, with a \$5,000 practice in California would like to exchange locations with a man doing a like business in the same line in one of the smaller cities of the Middle West, Minnesota preferred. Family reasons compel me to make a change. Address 432, care of this office.

HOSPITAL AND PRACTICE FOR SALE

Hospital and practice in northern Minnesota town for sale. All modern equipment in hospital and office including x-ray and accessories. Practice worth \$10,000 during last year. Good opening for real live man who can do surgery. Have a larger surgical field in view, and want to change at once. Address 441, care of this office.

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A \$5,000 practice, office equipment, and modern home in northern Minnesota town of 800. Only physician. Established eleven years. Large territory. Collections over 90 per cent. Practice can be increased from 25 to 40 per cent with a little surgery. Want to retire from general practice. Part cash, balance on time. Will not sell except to capable man. Scandinavian or German will help, though not necessary. Address 442, care of this office.

DOCTOR

Doctor: If you want practical postgraduate work during the fine season in the delightful city, write for particulars. Thirtieth annual session opens September 25, 1916, and closes June 9, 1917. New Orleans Polyclinic, P. O. Drawer 770, Graduate School of Medicine, Tulane University of Louisiana.

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THE CHICAGO POLICLINIC

The 26th annual special courses of postgraduate work in the well-known Chicago Polyclinic and Post-Graduate Medical School is announced to begin April 2 and May 7 of next year. These splendid courses furnish the general practitioner a great choice of subjects; and no man spends three weeks under these trained instructors without going back to his work with greatly increased interest and pleasure to himself and profit to his patients.

No practitioner is doing himself or the public justice if he does not take such course very often.

CANDY MEDICATION

The Western Chemical Co., Inc., of Hutchinson, Minn., made no mistake when they concluded that the medical profession would speedily recognize the merits of candy medication, i. e., the preparation of bad-tasting drugs in candy form so as to make all such drugs really pleasant to the taste, both of the child and the adult.

The company has now an almost complete list of the drugs that are desirably put up in this form; and their product may very properly be called elegant. The profession has given the undertaking the greatest encouragement, as is shown by many orders and "repeat orders" from the best men in many parts of the country.

Samples are cheerfully sent to any physician.

INTERESTING TO X-RAY MEN

The recent announcement that Mr. Clarence E. Rohrer is now associated with the firm of Geo. W. Brady & Co., is of particular interest to x-ray men. Mr. Rohrer has been in the past connected with The Scheidel-Western X-Ray Co., and their successor, The Victor Electric Corporation, and in his work has made many friends in the profession.

Aside from Mr. Brady himself, probably there are

not a half dozen men in this country as thoroughly and practically versed in the intricacies of röntgenology as is Mr. Rohrer; and his association with Mr. Brady puts all his experience in x-ray work at the disposition of all x-ray men, regardless of what x-ray apparatus they may be using.

"Paragon Service," for which Geo. W. Brady & Co. are famous, has been of much valuable service to the profession and manufacturers of x-ray apparatus. Adding Mr. Rohrer's talents to the organization greatly strengthens it, and we believe the field is to be congratulated quite as much as are Messrs. Brady and Rohrer.

THE HEIDBRINK COMPANY

This company offer the general practitioner, the surgeon, and other specialists an automatic anesthetizer that seems to possess every quality that can be put into or demanded of such apparatus. The makers say it is "the machine with positive control," which means a practically perfect machine in this line of work. It both delivers and indicates exact dosage. That is indeed high praise of an apparatus upon which life often depends.

The Heidbrink name stands for the best, and the Heidbrink Company stands behind the name to guarantee perfect satisfaction to all who use their instruments.

THE EITEL HOSPITAL

Five years ago tomorrow (Jan. 2), Dr. George G. Eitel opened in Minneapolis a 100-bed hospital. The building was a revelation in architectural beauty, in scientific equipment, in homelike attractiveness. Its location in a purely residential district just beyond the business center of the city and on the border of charming Loring Park, overlooking its native and cultivated trees and shrubbery, its extensive flowerbeds, and its natural lake, with the new Episcopal and Catholic pro-cathedrals as a part of the background, which includes the wooded hills of the former channel of the Mississippi River—such a location and such conditions are simply ideal, and might well augur for Dr. Eitel a great success; but his most optimistic friends feared, if they did not predict, failure for the undertaking. The elements in this problem are full of interest, for they present themselves, in some degree, in every such enterprise.

Money was spent freely, if not lavishly, in erecting and equipping this handsome fire-proof structure, thus creating an interest charge on capital of large proportions. In addition, the operating cost, including the pay for high-grade assistants, nurses, general help, and expensive supplies, seemed ruinous, especially in view of the fact that the chief surgeon, Dr. Eitel, alone must supply, at least for a long time, the patients, whose presence only in large numbers would make success possible.

Added to the apparent hopelessness of this private undertaking was the competition of many other well-equipped private, semi-public, and public hospitals in the city, with large staffs of men of high professional standing.

That such an undertaking has become within five years an unqualified, indeed, a very great success in the hands of a surgeon always absorbed in profes-

sional, rather than in business, matters—in fact in the hands of a man with much of the lack of business acumen characteristic of medical men—is surprising in some respects and not at all in others. Dr. Eitel brought to the undertaking a well-earned surgical reputation and a genial personality. His associates are men who share his ideals, and are capable, professionally and temperamentally, of doing team-work.

Equally indispensable, though too many hospital owners and boards of directors forget or ignore it, is just the right superintendent, who, of course, must be a woman, with large executive qualities, but always a *lady*, for in the latter capacity she creates the atmosphere of the hospital, and this atmosphere makes the public reputation of the institution, quite independent of its professional reputation.

The superintendent of the Eitel Hospital is Mrs. George G. Eitel, and the results of her work, her supervision are seen on every hand—in the home-like appearance of the corridors and the rooms, in the gentle deportment of the office attendants and the nurses, in the daintiness of the meals and the luncheons served to patients and their visiting relatives necessarily detained in the hospital at night or at meal-time. Especially noticeable is the constant and quieting attention of nurses to those patients who temperamentally need special care and encouragement, and are without private nurses. The presence of sixty nurses in the training-school of the hospital—young women with at least a high-school education and some with a college training, of good

health and imbued with high ideals—guarantees this gracious attention at all times.

While the hospital is given over largely to the surgical work of Dr. Eitel, medical and obstetrical cases under the care of outside physicians are accepted. Special attention is now given to obstetrical cases, one entire floor being set aside for this work. Over three hundred babies were born in the hospital in 1916, without a single death to mother or child, except two still-born and one malformed babies. All premature babies are put into an incubator; and a pulmotor is kept in the hospital for emergency work.

As a private nurse is rarely needed for maternity cases, the hospital expense is less than the home expense when a nurse is employed for the home case; and the danger to both mother and child is almost entirely removed, while the safe painless methods in childbirth are employed in the hospital, and rarely can be in the home.

Not a few of the nurses who have graduated from the training-school of the Eitel Hospital now hold well-paid executive positions in other hospitals, for this training and the experience gained in the course are peculiarly adapted to this end.

A visit to this hospital by men who are either building or conducting hospitals, large or small, will be profitable; and all such visitors receive a cordial welcome.

Minneapolis is justly proud of the Eitel Hospital; and recently some of her public-spirited citizens tendered its founder a reception and dinner to express the public appreciation of his work.

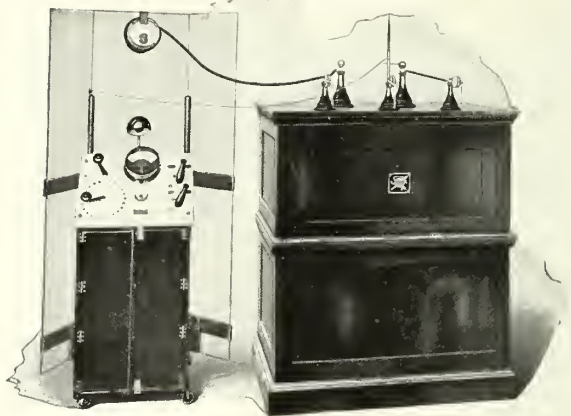
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PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, JANUARY 15, 1917

No. 2

PROPHYLACTIC EPISIOTOMY*

BY FREDERICK E. LEAVITT, M. D.
ST. PAUL

If we were to speak English we should say *incising the vulva as a protective measure*, instead of *prophylactic episiotomy*. Whether or not episiotomy is really a protective measure remains a matter of personal opinion. I designate it as such on my own responsibility. If it does prevent something worse from happening, it would seem quite as proper to use the term in this connection as it would when speaking of *version*; and *prophylactic version*, whether we approve of it or not, has well-established significance.

Upon consulting our text-books, we shall find very little said on the subject of episiotomy. In a vague way, reference is made to some sort of an incision made somewhere in the introital ring; but how it is made or how repaired after it is made, has, with few exceptions, never been published. Perhaps the omission is due to the fact that the operation itself, which, indeed, is very simple, is thought to be unworthy of consideration. Some authors condemn it altogether. In one text-book (Cragin) which recently came to my desk, I find a very short paragraph referring to episiotomy, in which the author says: "In the first place, it seems impossible to foretell that an extensive tear is to occur; and, second, properly repaired tears usually heal without difficulty." Williams takes about the same stand. On the other hand, De Lee, whose work on obstetrics will remain unsurpassed for many years, speaks of the operation as one worthy of con-

sideration; and Kerr, of Glasgow, in his excellent work on "Operative Midwifery," while not nearly so explicit as De Lee, recommends its application where laceration of the perineum seems imminent. Unfortunately, however, he gives no direction as to how the incision shall be repaired, which is, after all, the only part of the procedure at all intricate.

As to the merits of the operation, I make no plea further than to say that it has seemed a rational procedure in many instances where, in my judgment, something worse would have happened had I not resorted to it. Like every good thing, episiotomy is capable of being overdone. To make the incision in every case of labor would, of course, be to inflict needless injury; for we know that other measures, especially the element of time, overcome in most instances the perineal resistance without doing serious injury.

As a preparatory procedure in the performance of vaginal Cesarean section, the operator is enabled by it to enlarge the approach to the uterus and to expedite delivery. It also may be done with advantage in delivering the after-coming head in breech births, when the saving of one or two minutes may mean the saving of a life. But the occasion when it most frequently is of service, is in first births, when rupture of the perineum seems inevitable. Perhaps I am speaking to some who profess never to have lacerations. They, of course, will not be interested in an operation which contemplates the overcoming of resistance by cutting. But there may be here those who, like myself, find upon careful inspec-

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

tion that the perineum is torn more or less in every first birth. Another thing that has tended to increase the number of torn perineæ, is the general use of pituitary extract. Some of the worst lacerations I have seen were due to it. So it is well when using this drug to have in readiness a pair of scissors, for there is every probability that the perineum will rupture if it be this structure alone that prevents delivery.

Figure 1 is a dissection of the pelvic floor,

levator ani muscle, in the other, is accompanied by much more serious consequences. The incision may include a few fibers of the transversus perinei profundus, which muscle is shown on the opposite side. This, too, is a structure whose injury is not attended by much impairment of function.

Figure 2 shows how and when to make the incision. At the moment when the head of the child finds itself arrested at the perineum, the

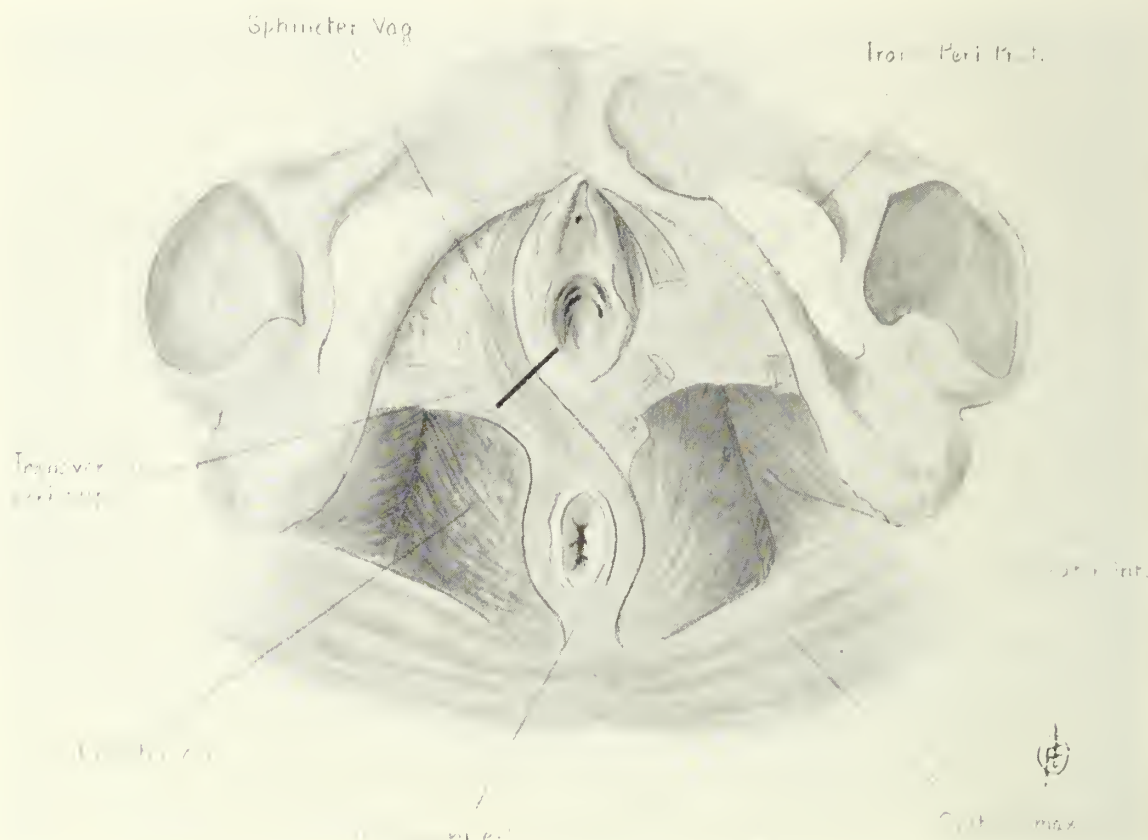


Fig. 1. Dissection showing superficial muscles about the vagina and the rectum. On the left side of the vulva a portion of the sphincter vaginae and the transversus perinei superficialis has been removed. The heavy black line on the right side marks the point and extent of the episiotomy section.

showing the superficial muscles about the vulva and perineum. The heavy black line at the center of the drawing, as you look at it, indicates the line of incision that is believed to be the most satisfactory one to make in performing episiotomy. A cut here will do no more serious damage than severing the sphincter vaginae muscle at its junction with the transversus perinei superficialis. A wound in this direction is relatively less dangerous than a tear into the structures of the median line or into one of the sulci; for an injury to the perineum, in the first instance, or to the

levator ani muscles stretched, and the anus gaping, one blade of a blunt-pointed pair of strong scissors is passed between the child's head and the introitus, and the tense structure is cut in an oblique direction. It matters little on which side the cut is made. A blunt-pointed bistoury can be used, but it is not possible to make the incision so uniform with it as with scissors. With one bite a cut of an inch or an inch and a half in length is made through the resisting ring. The most favorable time to make it is *not* when the uterine contraction is at its height. It is better

to wait until it begins to subside; otherwise the child's head may pop out when one is unprepared to manage its delivery.

Figure 3 shows the wound as it lies open after delivery has been completed. Cut at a time of great distortion, the relaxed vulva later assumes a contour that can become very confusing when repair is begun. Just below, on the same drawing, I have indicated how the first suture should be placed. To begin at one angle of the wound, putting in one stitch after another until the whole is brought together, would destroy the topog-

been placed in position. To be a little more succinct: As soon as this first cached suture is well placed, I tie a single but loose knot in it, fix a clamp to its ends, and hand the clamp to an assistant. While he makes gentle traction toward the patient's opposite thigh, I put in three or four interrupted catgut stitches. The direction of traction is then reversed, and the vaginal surface similarly united.

The results of the operation have been exceptionally gratifying, first, because the wound is in a favorable position to heal readily, which it does;

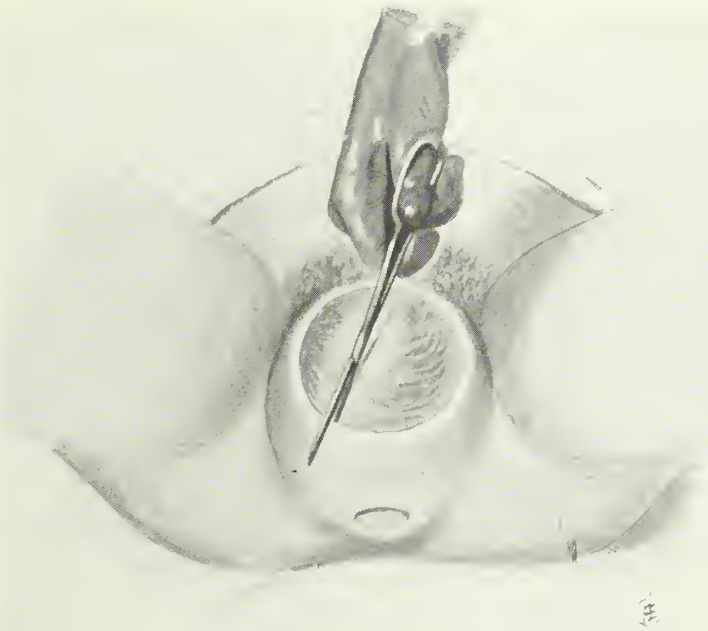


Fig. 2. Cutting the introital ring.

raphy of the parts, even if it did not impair their function. Instead, the first stitch should embrace the wound at its base, bringing into place the severed fibers of the constrictor vaginae and the transversus perinei muscles. The needle is entered at a point on the vulva just above where the scissors began to cut when the section was made; it then is passed obliquely downward in the direction of the other edge of the vulva, coming out at a point on its surface that corresponds with the one where it entered. Thus are brought together those tissues which were the first to give way under the blades of the scissors. The stitch may, or may not, at once be tied. Personally, I have thought it obscured the relation of the parts somewhat to tie it before the other stitches have

and, secondly, the more important structures of the pelvic floor have been preserved.

DISCUSSION

DR. EMIL KING (Fulda, Minn.): In bringing before us an apparently small thing in the science of obstetrics, like episiotomy, Dr. Leavitt has done us country practitioners quite a service. Personally, I have not employed this little procedure as much as I should have done. I have employed it only twice so far, but I have found it to be what Dr. Leavitt states it to be. I think it will save a tear lower down in the perineum; and, in repair of the tear, it is much easier and simpler to close the incision.

He made a point which I think is very valuable, and that is in breech presentations, where the after-coming head is difficult to deliver. I am sorry it did not occur to me to try this procedure before, because by doing it we may save the life of the baby.

He said something about pituitrin being responsible for more tears, but, so far as my experience goes, in one hundred cases in which it has been used, I do not find it so, but that is a matter of the personal equation. Some men are more or less careless in the use of it, while others select their cases carefully and do not meet with the accidents so frequently reported from its use.

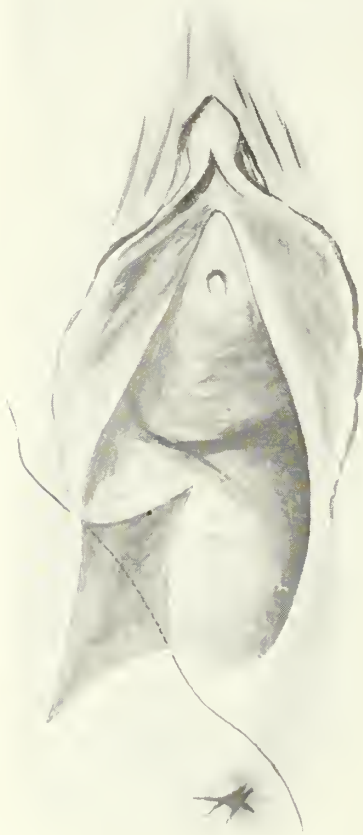


Fig. 3. The first stitch (cached) brings the commissure together. The two lateral portions are closed with two or three interrupted sutures each.

DR. R. T. LA VAKE (Minneapolis): Dr. Leavitt has given a very clear exposition of this operation. I have seen excellent results following its use by men with the selective judgment of Dr. Leavitt. It was mentioned that Dr. Cragin, in his text-book, does not advocate the operation. Dr. Cragin, as I recollect from

my association with him at the Sloane Hospital for Women, felt that its obvious disadvantages outweighed its possible advantages. It inflicts a wound where experience has often proved that a laceration may be avoided. It may add another wound to an existing internal laceration, thereby presenting two wounds to be repaired, instead of one.

From an anatomical standpoint I believe that it is doubtful whether in its usual application, episiotomy subserves the purposes for which it is fundamentally instituted, namely, to substitute a clean cut in the levator ani muscle in place of a ragged laceration, thereby allowing a more firm subsequent repair, and to save the sphincter ani muscle from laceration. Upon the integrity of these two muscles depends the future comfort of the woman, irrespective of the ease of repair and the cosmetic result that we desire to obtain. It does not accomplish the first purpose because injury, if it occurs at all, generally occurs to the levator ani before the apparent unyielding constriction at the vulva leads to the performance of episiotomy. The levator fibers passing to the perineal body lie at least one inch and one-half from the introitus. Therefore in order to obtain the result aimed at, the procedure would have to be instituted long before it is usually instituted, and the incision would have to be a more extensive one than is generally used.

As for the second purpose: in a careful delivery the sphincter is seldom torn, and it is questionable whether the lateral oblique incision will save the sphincter in a difficult case. When episiotomy is decided upon, many men employ the posterior incision in the midline in preference to the oblique incision, as it does not cut through the superficial muscles and cannot implicate the duct of either of Bartholin's glands. It is difficult to see how this incision would spare the sphincter.

The well-repaired perineal laceration heals firmly, barring infection, and should give no cause for regret as to anatomic or physiologic result, provided the injury to the levator ani has not been of the concealed variety. Concealed injury of the levator is not obviated by episiotomy as it is usually employed. I believe we would better let nature take her course, with our careful co-operation and assistance, and then, if necessary, make a good repair. With great care we are often surprised to find that no laceration has occurred. We have then not inflicted an unnecessary wound to be repaired and not added another avenue for the possible entrance of infection.

DR. LEAVITT (closing): I do not think I have anything in particular to add to what has been said by the gentlemen who have discussed the paper. It is largely a matter of opinion and argument. I simply present this operation as one that has been of advantage to me in many instances. I may be wrong, but there are good authorities who favor the operation, and I firmly believe it has some valuable uses.

TUMORS OF THE SPINAL CORD, WITH A REPORT OF EIGHTEEN CASES*

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In reviewing the literature on the subject of tumors of the spinal cord, one is impressed by the large number of instances in which a diagnosis was made at autopsy and the comparatively few reports of early diagnosis and operation. This is rather surprising when we consider that the condition is a disease in which the

tactile sense is necessary in order to make a diagnosis of tumor of the spinal cord. One prominent authority states that he knows of no recorded instance of cord tumor in which this symptom was absent. In one case of our own, in which the tumor lay on the anterior surface of the cord, there was no disturbance of tactile sense. In this case the location of the tumor was made entirely from the disturbance of pain and temperature sense.

Root pains were previously supposed to be absent in cases of intramedullary tumors; however, they were one of the prominent symptoms in each of five consecutive cases during the past

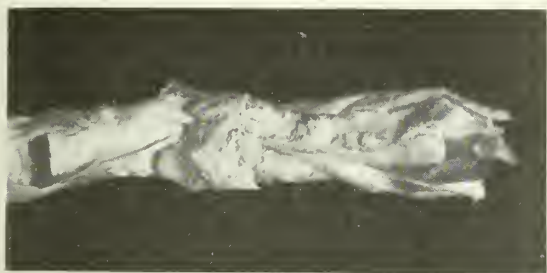


Fig. 1. Tuberculoma lying on the anterior side of the dura and compressing the cord.

pathologic lesion is a neoplasm, whose existence and growth mean a destruction of the delicate structures of the spinal cord. There is no argument for delaying operation after a definite diagnosis has been made. It is probable, however, that in a great many instances in which such a diagnosis is suspected no operative means for relief are undertaken. This is due to the fact that an absolute diagnosis is often impossible



Fig. 2. The same as Fig. 1. The dura incised through the tuberculoma.

and to the fear of a fatal termination following laminectomy.

In our work in this field we have found that many persons with cord tumors do not present the classical symptoms described formerly. Neurologists have concluded that disturbance of the



Fig. 3. Destruction of vertebral arches and spines due to pressure from an extradural fibroma.

year. We have found that when a careful history is elicited root pains are certainly one of the commonest and most persistent symptoms in tumors of the spinal cord. They vary greatly in individual cases; they are not always constant or severe in character, and in many instances an interval of several weeks or months may intervene between the attacks. In a recent case of extramedullary tumor the pain was intermittent in character, but extremely intense when it did occur. During the attacks the patient had spells of vomiting. The pain was unilateral and confined to the region of the gall-bladder. An operation on the gall-bladder had been performed

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

during one of the seizures. Later on, the same pain returned with increased intensity, accompanied by paralysis of the lower extremities. A tumor was found lying on the posterior surface of the cord and pressing on the right seventh dorsal nerve root. It would be interesting to know whether root pain may be intense enough to cause reflex vomiting without disease of the abdominal viscera.

In suspected cases of spinal cord tumor laminectomy is often not advised on account of the fear of a high mortality following such procedure. In the past few years the advance in neurologic surgery has been as great as, and possibly

on the fifth day. The cause of death in the other two cases was not absolutely determined, but it certainly was not shock.

We believe that in many questionable cases with level symptoms and paralysis, even though a definite diagnosis of tumor cannot be made, a laminectomy is justifiable. A sufficient number of such patients will be benefited to justify the procedure; and in some a tumor will be found. Certainly a patient whose chance for recovery is slight with any other form of treatment should not be denied the privilege of an exploratory laminectomy. Some authorities have even advised laminectomy with incision of the dura for

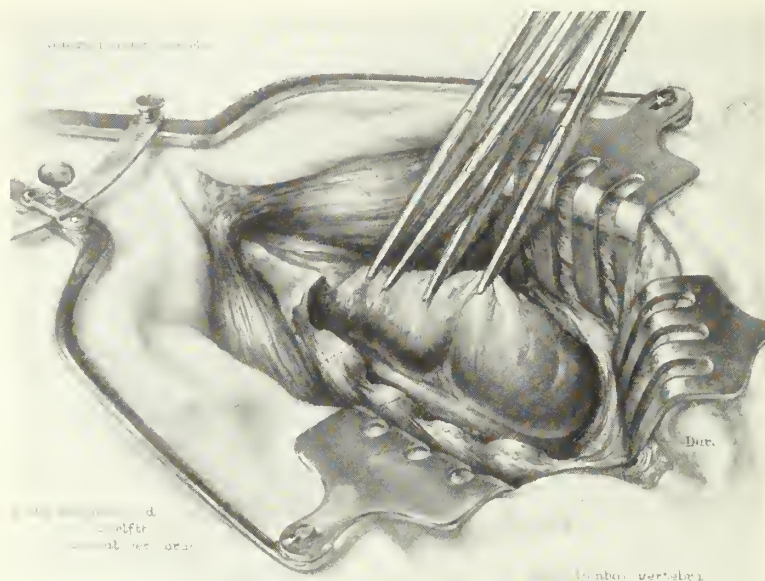


Fig. 4. Large extradural fibroma compressing the cord and causing complete paralysis.

even greater than, that in the field of general surgery. The mortality following laminectomy for spinal cord disease should be well under 10 per cent.

In a series of 43 consecutive operations for spinal cord disease, exclusive of traumatic cases, we have had four deaths. One of these might be classified as accidental. The patient died on the eleventh day of pulmonary embolism. The autopsy revealed a large number of clots in both iliac veins, and an enormous number of clots in the pulmonary vessels. Death was instantaneous. Another death was that of a patient with a tuberculous lesion in front of the dura and extensive tuberculous lesions of both adrenals. Death resulted from suppression of urine

the purpose of decompression in degenerative conditions of the cord. Our experience would lead us to believe, however, that this operation is hardly justifiable, although we have one patient who entirely recovered from paralysis following a negative exploration.

A few cases of localized syringomyelia, with a single cyst or collection of fluid in the central canal of the cord, have been entirely relieved of symptoms when the cyst was evacuated. At least two such cases were reported by the late Dr. Monroe, and a few others have been reported in the literature.

In two instances we have operated on cases of this kind. The cord collapsed after the cyst was punctured, and resumed its normal shape;

but the relief of symptoms was not marked in either instance. It is quite likely that in some of these cases there are more than one of these cysts situated at different levels of the cord.

In cases of angioma of the cord with a large mass of dilated vessels causing pressure, patients are often entirely relieved by a simple decompression of the spinal cord. As more experience is obtained, it may be found justifiable to perform this operation in other types of cases. The present report is based on eighteen consecutive cord tumors.

1. *Extradural tumors*.—Extradural tumors are comparatively rare, and in most instances are

dura. At operation the cord bulged out of the canal when the dura was opened, although no tumor could be found on the anterior surface of the cord or attached to the dura. Autopsy revealed this tuberculous mass, which explained the cord symptoms. The other was a large fibroma lying within the arches of the spine, producing enough pressure to erode three laminae and spinous processes and to cause paralysis by flattening the cord. (Figs. 3 and 4.) Unfortunately, the patient had been told two and a half years previously that her trouble was degeneration of the cord, and that it was useless to have anything further done. Even though the pressure was great enough to erode the bone in a marked degree and to cause complete paralysis by com-

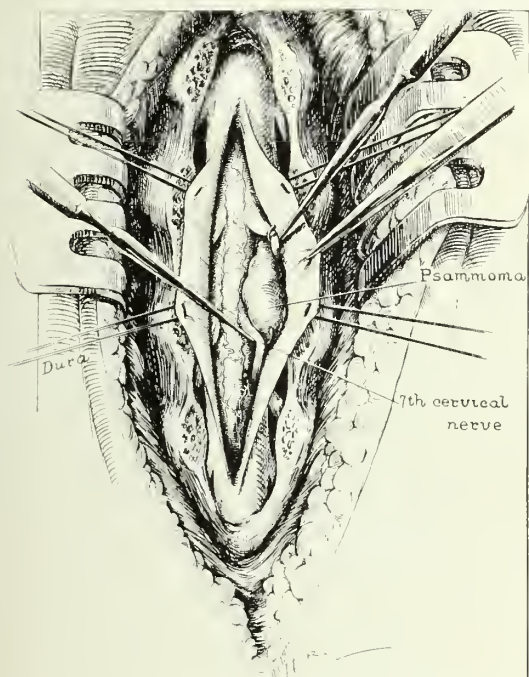


Fig. 5. Tumor lying on the anterior side of the cord in the cervical region, presenting between the sixth and seventh cervical nerves.

not true tumors of the spinal cord. They are sarcomas, fibromas, lipomas, or tuberculous processes which have no direct connection with the spinal cord. They produce cord symptoms from pressure because they happen to be situated within the arches of the spine and press on the dura and cord. A few tumors which arise from the dura itself produce symptoms in the same manner, either within or without the neural canal. In this series there were two tumors of this class. One was a tuberculoma situated on the anterior surface of the dura and pressing backward on the cord. (Figs. 1 and 2.) It had not, however, involved the structures of the

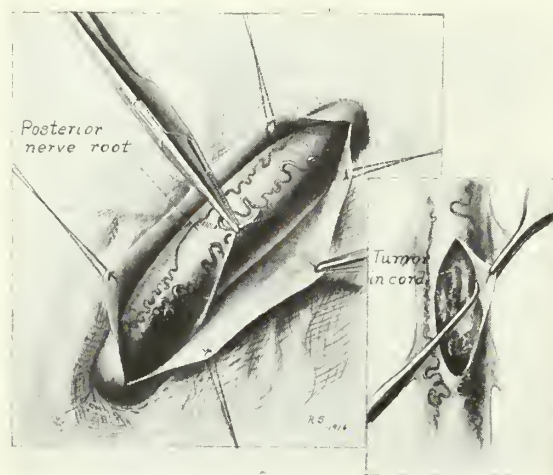


Fig. 6. Intramedullary tumor of the cord. Appearance before and after incision into the cord.

pression of the cord, there was absolutely no history of pain.

2. *Intradural extramedullary tumors*.—These are the commonest type of cord tumors. A large number of them are sarcomas or gliomas, the two often being confused. Fortunately, a large percentage of them lie on the posterior surface of the cord, are readily seen when the dura is opened, and, in most instances, can be easily removed from the surface of the cord, the attachments being mostly filmy adhesions between the tumor and the pia. The series here reported included six tumors of this character. (Fig 5.)

3. *Intramedullary tumors*.—These tumors are mostly gliomas, are situated within the substance of the cord, and were formerly supposed to be inoperable, with no hope of the patient's recovery following their attempted removal. It has been found in recent years that many have a

distinct capsule with a line of demarcation between the tumor and the cord substance, and that some of them can be enucleated with almost no traumatism to the cord except that consequent to the initial incision over the tumor. (Figs. 6, 7, and 8.) These are the cases in which the two-stage operation is often indicated. It has been found, largely through the work of Elsberg, that, if the dura is incised at the primary operation, a longitudinal incision being made through the cord substance down to the tumor, the intramedullary pressure may cause the tumor to extrude itself to such a degree in a period of ten to four-

stances angiomas have been found in the corresponding segment on the surface of the body. (Figs. 9, 10 and 11.) Some of these patients have been entirely relieved when the pressure was removed on opening the dura. In other instances relief has been obtained from ligation of some of these large vessels. Our series includes two cases of this type. In one of them the vessels were comparatively small, and relief from opening the dura should have given the cord room to expand and thus relieve the symptoms.



Fig. 7. Appearance of intramedullary tumor before incision into the cord.

teen days that its removal can be accomplished very readily. However, this does not always occur. In one of our cases of this type the tumor was not extruded in the second stage to any considerable degree. There were six tumors of this type, four of which could be removed. In the instances in which the tumor could be removed the patients, while not by any means well, are much improved.

4. *Angioma of the cord.*—In some cases in which the symptoms indicate a tumor of the spinal cord, a laminectomy has revealed a mass of dilated blood-vessels resembling an angioma and causing pressure on the cord. In a few in-



Fig. 8. Appearance of the same tumor at the second-stage operation. Tumor partly extruded from the cord.

Unfortunately, in this case no relief was obtained. In the other case, which has been reported previously, the vessels were of enormous size and entirely filled the neural canal. Though this appeared to be the less favorable of the two mentioned we were surprised to find that the patient, who had been unable to walk before the operation, recovered so rapidly from his paralysis that he was able to walk across the room without assistance in six weeks, and to return to his labor as a boxmaker in six months.

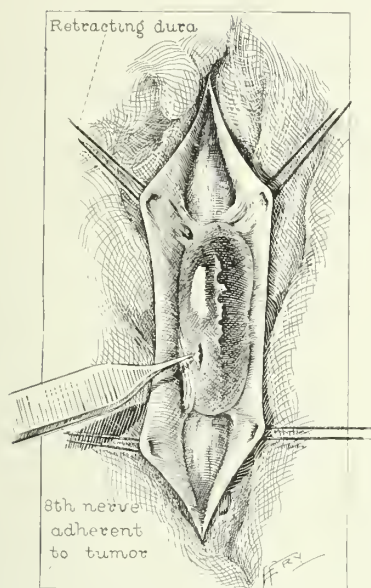


Fig. 9. Angiomatous tumor. Appearance when the dura was opened. Eighth dorsal nerve root (left) stretched across the tumor. (This patient had had his gall-bladder drained during an attack of root pain.)

5. *Cysts of the central canal (localized syringomyelia; localized meningitis).*—We have known for a long time that there were localized

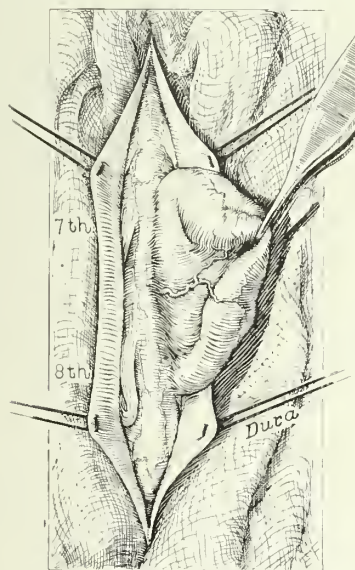


Fig. 10. The same tumor partly elevated from the cord, showing a single large vessel supplying blood to the angioma.

accumulations of fluid in the central canal of the cord in some of the degenerative processes. Formerly none of these cases were considered surgical. Several cases have been reported in

which patients with definite indications of tumor of the cord have shown at operation a single cyst in the center of the cord which produced enough pressure to cause paralysis. When a cyst of this kind is excavated the cord collapses, and resumes its normal shape and size. If there happens to be but one of these accumulations of fluid, recovery often follows its evacuation. If there are multiple cysts, improvement cannot be expected. The series contains two cases of

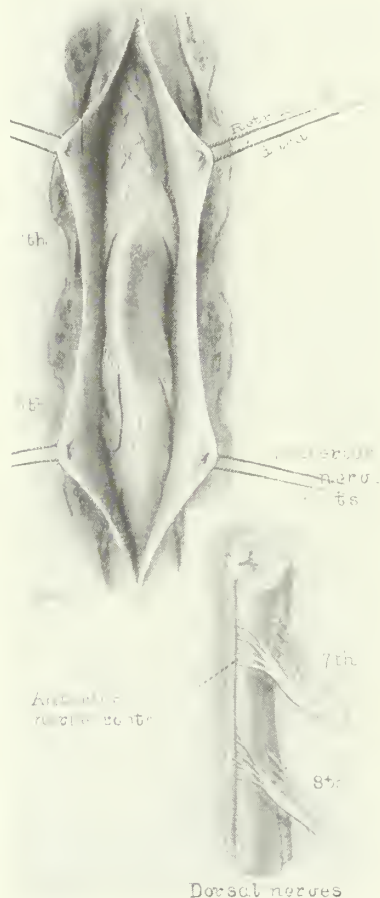


Fig. 11. Appearance of the cord after the removal of the tumor.

this type, in one of which there was a fair degree of improvement.

6. *Giant tumors of the cauda equina.*—Large tumors of the cauda equina situated about the nerves have been reported in several instances. They are often extremely large, and are very difficult to remove on account of their situation among the nerves of the cauda. I have not seen any tumors of this character. (See table.)

CONCLUSIONS

I believe that many tumors of the spinal cord are overlooked because the average physician is not familiar with the methods of neurologic diagnosis. In order to obtain better results with fewer cases of permanent paralysis, it is necessary that these tumors be diagnosed early and operated on during the early stages. Obviously, pressure maintained on the spinal cord for a considerable length of time produces a degenerative process in the delicate cord structures from which there is no regeneration. I believe that in many instances in which the diagnosis of cord tumor is not absolute, but in which there are level symptoms, a laminectomy should be advised. Root pains are a common symptom in most cord tu-

DISCUSSION

DR. CHARLES R. BALL (St. Paul): One of the remarkable things about Dr. Beckman's paper is the fact that he reports on eighteen cases of spinal cord tumor which were diagnosed correctly and the diagnosis confirmed at operation. The number of cases alone makes this a very remarkable report. I can only agree with all of the views he has expressed in his paper, and in my discussion simply emphasize some of them.

In regard to what Dr. Beckman said about the spasmodic nature of the pain; I think this is a good point to call attention to. I remember when I was a student I was taught with relation to brain tumors that there were only two conditions which could be responsible for a constant headache, one of which was a neurasthenic condition, a so-called nervous headache, and the other was a brain tumor; and when Dr. Beckman spoke in his paper of the spasmodic nature of the

SPINAL CORD TUMORS

	Case	Sex	Age	Duration of Symptoms	Location of Tumor	Time Since Operation	Pathologic Diagnosis	Unimproved	Improved	Well	Dead	Cause of Death
Extradural	142990	F	20	4½ yrs.	Lumbar	1 yr.	Fibroma		+			
	125886	F	59	1 yr.	Dorsal		Tuberculoma				+	Suppression of urine; tuberculous adrenals.
Intradural (extramedullary)	91114	F	40	9 mos.	Dorsal		Sarcoma				+	
	111220	F	36	3 yrs	Cervic.	26 mos.	Sarcoma			+		
	162179	F	27	2¾ yrs.	Dorsal	2 mos.	Glioma		?			
	155662	M	30	4 yrs.	Dorsal	6 mos.	Angioma			+		
	154990	F	38	1 yr.	Cervic.	6 mos.	Psammodoma			+		
	168039	F	58	1½ yrs.	Dorsal	1 mo.	Sarcoma				+	Pulmonary embolism on eleventh day.
Intramedullary	152390	M	41	1 yr.	Dorsal	7 mos.	Glioma		+			
	130591	M	28	1 yr.	Lumbar	8 mos.	Glioma	+				
	59174	M	39	1 yr.	Dorsal	3 yrs.	Glioma	+				
	155615	M	43	5 yrs.	Dorsal	6 mos.	Glioma		+			
	105671	M	17	1 yr.	Dorsal	26 mos.	Glioma	+				
	170871	M	34	4 yrs.	Dorsal	1 mo.	Glioma		?			
Angioma	102880	M	30	17 yrs.	Dorsal	2½ yrs.	Angioma			+		
	122575	F	46	1 yr.	Dorsal	20 mos.	Angioma	+				
Cysts	92786	F	24	14 yrs.	Dorsal	3 yrs.		+	+			
	42688	F	46	10 yrs.	Dorsal	6 yrs.		+				

mors. In some instances the pain may be so slight, or the predominance of other symptoms at a later period may so overshadow the previous pain, that it is entirely forgotten by the patient, and can be obtained only by the most careful questioning. Level symptoms are always present in the later stages, although tactile, pain, and temperature sense may not be involved to the same degree. In some instances, one of these may be absent, and the tumor may then be located by the definite level of the others.

I urge a more careful examination in neurologic conditions, and a more frequent and earlier laminectomy in cases of suspected tumors as the only method of preventing crippling due to long-standing pressure of tumors on the cord.

pain sometimes in tumor of the spinal cord, the analogous condition which often exists with reference to the pain in brain tumors occurred to me. We are apt to feel in a brain or spinal-cord tumor that the cause is acting all the time, and the pain will be more or less continuous, but this is distinctly not true in a great many cases, because I have seen in brain tumors, especially, the spasmodic nature of the pain to which Dr. Beckman has called our attention in his paper.

Another point which he brought out and which I want to emphasize is this, that in taking the history of these patients in the various stages of their symptoms, particularly when we see them after the stage of paralysis has developed, the history of the pain stage is hard to elicit. If you ask them about the pain, they are apt to say it is not of a severe character, or they do not say very much about it; but, if you go after them vigorously on this subject, you will get the history of unilateral or bilateral neuralgic pain in the beginning of their trouble.

In regard to the sensory disturbance of which the essayist speaks in connection with the report of one case in which tactile sense was maintained where there was a loss or diminution of pain and temperature sense: I think this disassociation of sensory qualities is true in a large number of cases. We do not often find a typical picture of complete anesthesia up to a certain point. There is quite apt to be an irregularity in the disturbance of sensation; some qualities of sensation are maintained, and other qualities are affected.

Another thing with relation to spinal cord tumors, and the reasons and causes for decompression is, it has not been so forcibly presented to us as the reasons for decompression in brain tumor. Of course, when a patient comes to us with symptoms of brain tumor, one of the first things we do is to make an ophthalmoscopic examination; and, if we find a choked disc, it is apparent that a decompression must be made, if we wish to save the vision. We must think of spinal compression as we do of compression on the optic nerve. The spinal cord may be regarded as one big nerve, and, when a tumor is pressing on it, there is the same loss of function as obtains in a brain tumor, which causes choked disc in the optic nerve. The end-result in both will be permanent destruction of function unless means are taken to relieve the pressure.

In spinal-cord tumors there are three stages in the symptomatology. The first is the unilateral or bilateral pain occurring very often, as Dr. Beckman has said, intermittently. In the second stage we have the Brown-Sequard symptom complex. We must remember, however, that the typical Brown-Sequard syndrome seldom occurs. Where there is loss of motion only on one side and loss of sensation on the other, one is more apt to find some disturbance of sensation on the side which has the most marked motor paralysis, and some involvement of motion on the side in which sensation is the most affected. In the third, or last stage, we find diplegia and a somewhat symmetrical involvement of both motion and sensation on both sides.

In the neuritic or painful stage, when we are in doubt as to the diagnosis, a spinal fluid examination is of very great value in deciding the question as to whether a laminectomy is advisable.

In regard to laminectomies in degenerative lesions of the spinal cord: I think with Dr. Beckman that there is no logical reason why we should expect any improvement.

In a recent discussion before the Neurological Society of New York on laminectomies for degenerative lesions of the cord, the conclusion was, that the relaxation in muscular rigidity and muscular tension, which occurred in such cases after operation, was only transient in character and was probably due to the influence of the anesthetic. We have no reason to doubt that conclusion.

I wish to emphasize what Dr. Beckman said about the importance of operation whenever we have a focal cord lesion. In all doubtful cases where the symptoms indicate pressure of the spinal cord, a laminectomy should be made. We have not lived up to our opportunity thus far in this regard, and Dr. Beckman's paper, with these eighteen cases presented to us, is both educational and stimulating.

DR. ROBERT EARL (St. Paul): Dr. Beckman brought out a very important point when he said intramedullary tumors should be operated on in two stages. He also stated that we should cut down to the tumor at the first operation, and go in about ten days later, when the tumor would probably be extruded to the surface of the cord, and could then be easily removed. Dr. Beckman also stated he had one case in which the tumor was not extruded, but he did not go further with reference to the treatment of that case, and I should like to ask him to say something further on that point. My personal opinion is, that, when a tumor is not extruded onto the cord at the time of the second operation, it is best to leave the tumor, and not try to remove it for fear we may do considerable damage to the cord or get a hemorrhage which will be difficult to control. The laminectomy will serve as a decompression and may in this manner afford considerable relief.

Another point which should not be forgotten is, that there is danger of localizing the tumor too low in the cord; therefore, if the tumor is not found, it is advisable to remove the spines and laminae of the two or three vertebrae above the level indicated by the symptoms.

DR. ARTHUR C. STRACHAUER (Minneapolis): Tumors of the spinal cord are entirely surgical. There can be no dissenting opinion as regards this fact; and still these cases are treated medically until the most favorable period for operation has passed, never to return. This has been the principal difficulty with our material at the University Hospital. The patient has been permitted to lie in bed until extensive, foul bed-sores have developed; and the bladder has been catheterized until severe cystitis has developed and the infection has ascended to the kidneys. The patient is septic, and in this extremely undesirable condition is sent to the hospital. Following operation a large number of these cases slowly, after ten or twelve weeks or more, burn out and die. Improvement in our results is going to depend upon and follow earlier operative intervention. Men of the standing of Cushing, Elsberg, and Krause are more and more frequently performing exploratory laminectomies.

As Dr. Beckman has pointed out, the operation of laminectomy of itself is not a dangerous procedure. Elsberg reports 150 consecutive laminectomies without a death. We have not had a single death at the University Hospital due to operation. The principal causes of death in laminectomy are given as hemorrhage and shock, which two are frequently synonymous. These factors are under the control of the operator, and should be eliminated.

In an experience with three laminectomies performed under local anesthesia I was greatly impressed with the angiospastic effect of the adrenalin in the novocain solution. The operations were practically bloodless. Adrenalin should be injected to control hemorrhage in extra-hazardous risks even though the operation be performed under general anesthesia. This is common practice in some clinics, notably the Mayo Clinic. In goiter and prostatic surgery the adrenalin alone, or with novocain, is injected for its hemostatic effect. I would advise its extension to the operation of laminectomy. I do not advocate local anesthesia for laminectomy except when general anesthesia is abso-

lately contra-indicated or extra-hazardous, as in fractures of the spine with a crushed thorax, in which class of cases it is a life-saving procedure, shock and hemorrhage being reduced to a minimum.

DR. BECKMAN (closing): Dr. Earl has asked about the treatment of intramedullary tumors that are not extruded at the second stage and cannot be removed. I do not believe that we can handle the spinal cord to any extent without injury. It must be turned to get the tumor, and then we must take hold of the posterior nerve root or must section that root to rotate the cord and also handle the cord itself, or we can take hold of the dentate ligament and rotate the cord to one side. In one case, in which the tumor was not extruded in the second stage, I was able to remove it by careful dissection, simply picking up the tumor with a little blunt dissection. In another case in which the tumor could not be removed, when I attempted this there was considerable bleeding, which I controlled. As pointed out by Dr. Strachauer, by opening the dura the tension and the pressure is relieved sufficiently so that the trophic nerves apparently are benefited, the patient's bed-sores commence to heal, and the general condition is better without any real relief of the symptoms. When there is a definite level it is best to know just where the tumor is going to be found. As a rule an x-ray picture should be taken before the operation, and

the findings marked on the patient's back to show the level of the symptoms. It is a good rule to make the lower end of the incision at the upper point of this level because the failure to locate the tumor at operation has always been in going too low instead of too high.

I do not believe that laminectomy is justifiable in cases of degeneration of the cord. I want to convey the idea that the more experience we get in diagnosing tumors of the spinal cord, the more we know they do not conform to the older ideas of symptomatology. We may have a case under observation for a long time, and finally decide to explore; too often in some of these cases we find tumors that we really did not expect to find. When patients have definite level symptoms that can be excluded with reasonableness, and general degenerative processes in the cord, like a lateral sclerosis, they should have the benefit of a laminectomy. Laminectomy in a patient who is depleted is a serious operation, but in a patient in good condition, and with an experienced surgeon, it is not a very dangerous operation. One surgeon has reported 98 consecutive laminectomies without a death. He has been particularly fortunate; but I think as our experience grows, and as we resort more and more to local anesthesia and to the two-stage operation, our mortality will be five per cent, instead of ten, as it is now in the hands of experienced operators.

DEFORMITIES AND LIMITED MOTION IN JOINTS RESULTING FROM TRAUMA OR OTHER CAUSES MODIFYING THE MUSCULAR BALANCE, WITH A STUDY OF THE SURGICAL PRINCIPLES INVOLVED IN THE TREATMENT*

By C. N. CALLENDER, M.D.

FARGO, NORTH DAKOTA

There is no community in whose midst, and familiar to every one, is not found an acquired deformity of some part of the body as a monument to some surgeon's failure. There are few busy or experienced physicians who do not find themselves embarrassed by the presence, in their vicinities and among their clientele, of an unsatisfactory result of fracture or other traumatism, whether it be a deformity or a limited or painful joint-function. The good results, though numerically much greater, make no showing or cause no comment, while the occasional deformity, evident to the eye or marked by a limp, announces itself very conspicuously.

Our anxiety in considering the care of a traumatism is intensified when we know a joint region is involved, for there appears, not only the greater difficulty of diagnosis, but the

equally difficult problem of the consideration of the forces at work tending to deformity, with the possible resulting limitation of joint-function.

It is to call attention to the juxta-joint injuries, where deformity may result, where joint-function remains limited or painful, that I present this paper, and to consider, as well, how the same surgical principles apply in the care of similar deformities where forces other than fractures operate to limit the normal functioning of the joints.

Before considering these joint and near-joint conditions it would be well to observe how peculiarly specialized is a joint-function, and, since it is so specialized, the more carefully to consider how, through the natural physiological development of the joint and its function, the anatomical structures have been developed until one type of tissue in the joint becomes strengthened, and merged into stronger and denser tissue

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

outside forming the capsule. As greater demands are made, new forces or re-inforcements are added as ligamentous bands, and these are played over by the tendons and muscles controlling the joint. Thus the envelope of the joint, and the joint must be considered a special mechanism, and as such it merits our careful study.

Where, in joint injuries, fractures play their part, one common feature, or one feature common to all, is that of the anatomical and physiological forces present and operating to control the small fragment that has been torn from the leverage control of its own shaft; and where this fragment, by virtue of the forces acting about the joint, the complete joint envelope, becomes more a part of the other bone of the joint, controlled by the leverage operating there. This small fragment is handed over to the pull of the capsule, or capsular ligament with its ligamentous re-inforcements, with or without the co-operation of muscle tendons playing over and associated with that capsule. Thus it bears a more definite functional relation to the unfractured bone entering into the joint than to the bone of which it is a part. It is therefore necessary to study how best to bring the fragments into the most accurate alignment, and into such position as will, considering the forces operating, allow of the ultimate limit of joint action most difficult to obtain after union. As examples of this we note injuries at the shoulder-joint, at the elbow-joint, at the wrist-joint, at the carpometacarpal joint of the thumb, at the hip-joint, at the ankle-joint, and at the astragaloscaphoid joint.

Experience has shown peculiarly definite, faulty results, so uniform that the cause may properly be charged to a union with an alignment of the fragments where the physiologically weak muscles are controlled by a stronger set, aided by continuously acting gravity. For example, in fracture of the upper extremity of the humerus, the full limit of motion found most difficult to secure is that of abduction and outward rotation of the arm. Either the inaccurate alignment of the larger fragment with the smaller, because of the undue control in which the small fragment is held by the capsular and muscular envelope of the joint, or the effect of the stronger adductor pull, aided by gravity, has permitted over-pull, over-stretching of the weaker abductor set of muscles. In either case the adjustment of the fragments with the arms in full limit of abduction and outward rotation gives the most satisfactory results.

Similarly in fractures at the lower end of the humerus, the result too frequently is limit of flexion, extension, and supination. Here the small fragment, being the trochlear surface, the capitellum, the lower epiphysis, or the whole condylar fragment, is held under the control of the capsular ligament, with or without the help of the forearm muscles, tending to carry this small fragment away from its natural alignment as in flexion and supination. Since complete flexion of the forearm relaxes the pull on the fragment and, at the same time, allows of the relaxation of the muscle tissue, the resulting healing in this position will by the aid of gravity easily permit of gradual extension to the limit, while the unharmed flexor set will be capable of producing the limit of flexion and supination. In the same way in the fractures that occur at the base of the metacarpal bone of the thumb, the small head fragment, held in its natural alignment to the carpal bone by the capsule, is released from the leverage shaft control, and the shaft by the stronger thumb abductors is carried toward the fingers. Union in this alignment will not permit of the necessary thumb abduction, so important to the strength and usefulness of the hand. While if the metacarpal fragment, the shaft, is carried out in the complete abduction, healing then allows of the full limit of all functions.

Similarly in fractures of the neck of the femur, we again have to deal with a small fragment whose natural position in relation to the capsule and its muscular and tendinous re-inforcements is that of abduction, and whose abductor set of muscles is physiologically much weaker than that of the adductors, especially when aided by a continuously acting gravity. Besides, experience has shown that the function of abduction is usually most limited in such fractures; and the usefulness of the hip-joint is correspondingly lessened where such abduction is not permitted. This again suggests the adjustment and fixation in the position of complete abduction, relaxing again the weak set of muscles and preventing their degeneration or further weakening.

Fortunately, the astragalus is less frequently fractured, but the most serious deformity may result here. Consider a fracture through the neck of the astragalus leaving the head in its normal relation to the scaphoid at so important a joint. To fail to recognize this fracture, and to adjust the foot without a knowledge of the true position of the small fragment, is to court

disaster. Undue rotation of the foot in or out may tilt this head with its part of the neck so that, when union has taken place, either marked inversion or the equally faulty marked eversion, with the consequent loss of power of the over-stretched set of muscle, makes almost a useless foot. It is common to see in ankle injuries whether or not an accurate diagnosis is made, the foot put up at right angles to the leg, and in marked or moderate inversion, as in a true Potts. Such inversion may also carry a rotation at the astragaloscapoid joint.

In the cases now under discussion, those of fracture of the neck of the astragalus, to put up a foot in this position would decidedly alter the true relation of the astragalus head to the main body of the astragalus, and would bring about a marked inversion, with the forward sole of the foot looking distinctly inward, and would make the walking surface on outer edge of foot, and even on the dorsum of foot, as in a *talipes varus*, with the consequent loss of power of the peroneal group of muscles.

In the consideration of all these joint conditions we have had in mind the forces which act physiologically about these joints to maintain the limit of joint-function,—namely, the coupling effect of the capsule, grasping the ends of the bones and embracing important parts of the ends of those bones, the ligamentous re-inforcements or the ligaments of the joint, besides the tendons playing over these,—all forces to be maintained in a proper balance, avoiding tension or over-stretch, and thus conserving for the best function after healing all the tissues about the joint.

Further, consider the deformities and limited joint motions where forces other than fractures operate, namely, those causing a modification in the physiological muscle or muscle-group pull. This loss of balance in the muscles suggests an over-pull, in which one muscle or muscle group acts at a disadvantage, becomes over-stretched, and unrelieved by its proper physiological contraction, with the resulting degeneration to that muscle tissue, and later the modified excitability to electrical or other stimulation. The degree of gravity resulting from the loss of muscle-balance will depend on the degree of harm to the unrelieved muscles.

To consider this modified muscle-balance in relation to the effect on limitation of joint-functioning, from the simple contusion effect of a blow upon a muscle, such as the deltoid or the quadriceps extensor, or an injury causing con-

cussion or partial or complete laceration of the nerve supplying a muscle, to the temporary or complete loss of muscle or muscle-group power through anterior poliomyelitis, the effect differs only in degree, and the principle applies that relief must promptly be given to that weakened muscle, and that relief or relaxation must be maintained until voluntary power is restored naturally or by surgical interference.

To illustrate these types of cases from the temporary to the more permanent limitation of function, consider such a simple injury as a blow upon the deltoid or the quadriceps extensor, such as is experienced in a football accident. Note the marked limitation of motion that results, and as well the length of time necessary to restore the function of such contused muscle tissue. In the instance of injury to a peripheral nerve, for example, on operations in the neck, in removal of glands or tumors in close relation to the brachial plexus, there is observed frequently a temporary loss of power in a certain group of muscles. It is well to note these and apply proper surgical principles of relief.

In the case of lacerating injuries the question arises as to the true nature of the injury to the peripheral nerve, whether simple concussion, with temporary loss of muscle power, or whether partial or complete nerve severing, with the more serious loss of muscle power. In such cases as in paralysis of certain muscles at birth, for instance, loss of power of the deltoid, if unobserved, permanent harm and permanent limitation of abduction of the arm will result. Careful attention to this same surgical principle, that of the relief and relaxation of the weakened over-pulled muscle, will allow of its restoration to power and to function. More urgent than in any other cases are those of acute infantile paralysis. Here it is necessary at an early date to note the loss of muscle power, and to apply prompt adjustment and suitable support to relieve and relax the weakened muscles as against the strong physiological pull of the opponents. It is evident that, whether we are dealing with these small juxta-joint-fragment fractures or with injuries affecting the muscle balance, the effect of the advantage muscle pull, thought of anatomically and physiologically, is that producing deformity and limiting the joint-functions either temporarily or permanently.

This brings us to an enumeration of the surgical principles applicable in all such conditions, with aid of the following:

1. Immobilize the bone or extremity (in case of fractures).

2. Protect by suitable postural treatment or application of splints against the pull of the stronger muscle opponents, whether in case of fracture or loss of muscle balance from other causes.

3. Counteract by postural treatment the continuous effect of gravity.

4. Maintain this corrected or over-corrected position until voluntary power is restored or until surgical aid is effective.

5. After-treatments to maintain the tissue nutrition, such as starch baths, massage, muscle-kneading, and exercises.

It is interesting to note in the reports, surgical and orthopedic, coming from the army hospitals in Europe, the excellent care, both in first aid and later in the hospitals, given to the wounded soldiers, with the detailed method of treatment producing such excellent results in restoration of efficiency in bone and joint function.

DISCUSSION

DR. LAROSE (Bismarck): I have listened to Dr. Callander's paper with a great deal of pleasure and inter-

est. I am more or less interested in this particular line, and the paper is so complete it is hard for me to add anything, but I might emphasize a few points.

One of the first points Dr. Callander made in the treatment of deformities is, of course, prevention. It is much easier to prevent a deformity than it is to cure it,—that applies to a great many other conditions and, in order to prevent deformities, it is necessary to make a diagnosis and make a diagnosis early. This applies especially to disease and injuries of bones and joints. The diagnosis, of course, is a thorough and complete *x*-ray examination, and not only one *x*-ray examination, but examinations made before and after you have instituted treatment. Make your diagnosis when your case is first brought in, and see just what your deformity or your injury is, and then, after you have put the injured limb up, take more *x*-ray pictures to see whether you have corrected the deformity, because you may put up a fracture a number of times and still find in subsequent examinations that you have not accomplished what you really tried to do. Of course, this applies also to any injuries about the joints. Then, again, in anterior poliomyelitis cases where deformities are formed by contractures due to the action of the stronger set of muscles, an enormous amount of good can be done by treating these cases at the time, keeping them in proper position with splints, and in the meantime instituting your other treatment for the building up of the injured muscles.

THE ALIMENTARY TRACT AS A FOCUS OF INFECTION*

BY W. G. RICHARDS, M. D.

BILLINGS, MONTANA

Not the least important of the modern conceptions of medicine has been the realization of the significance of small foci of infection. More and more are we learning to look for the cause of a general disease in some local condition; and, as we appreciate the far-reaching effect of some seeming insignificant focus, such, for instance, as a pus pocket at the root of a tooth, no nook or cranny becomes too small to be regarded as the possible primary source of the disease with which we are confronted.

But, in searching for the remote, one is liable to overlook that which is near. In looking for small things, one is apt to lose sight of the large. And in seeking for small foci, one is a little in danger of acquiring a microscopic eye and missing the larger and more important. This is particularly true of the alimentary tract, where for many years we have so concentrated our attention on a few adnexa, such as the appendix and gall-bladder, that we have largely neglected the

many feet of bowel itself. The flora of the mouth and its accessory structures is rightly recognized as the source of general symptoms, but the far more numerous and varied floras of the intestines are often overlooked or ignored. In at least one matter the profession has absolutely reversed its old-time attitude, for then it looked into the abdomen, and, seeing the bowel, missed the appendix; now we as frequently see the appendix, and miss the bowel. Too often we need to apply to ourselves the words of the General Confession, "We have done those things we ought not to have done, and left undone those things we ought to have done," though quite frequently it is the patient who must finish the quotation, that, in spite of our ministrations, "there is no health in him."

As a potential source of infection no part of the body can compare with the bowel. It is a very sink of possible iniquities. About one-third of the fecal weight is made up of bacteria, and a healthy individual on an ordinary diet excretes about 56 grammes of micro-organisms a day,¹

*Read before the Montana State Medical Association at Miles City, July 12, 1916.

of infinite variety and potentiality, practically all of the pathogenic bacteria being found there at some time or other, besides a large assortment of so-called saprophytes, some of which, as certain forms of streptococci and the colon bacillus, become at times highly pathogenic.

It is, however, rather with the more chronic conditions than with the acute infections that this paper is concerned, for it is in these that we are so anxious to find a primary focus of infection, and, finding it, as we often think we do, in the form of an appendix, a gall-bladder, a tooth, or a tonsil, that particular organ is sacrificed, and surprise expressed when the expected result is not obtained. Particularly is this the case with what is known as chronic appendicitis and chronic cholecystitis. A great deal of attention has been paid to the organs concerned in these conditions, and, with the possible exception of the ovaries, more ruthless assaults on them are committed than on any other part. Probably this is due to the fact that disease of them is supposed to be indicated by so-called pathognomonic signs, signs which have been described by men of leading and authority in the profession, who, with the dogmatic positiveness of the teacher, have rather unduly emphasized these, forgetting that their own justly celebrated skill in diagnosis is more the result of a careful weighing of all the facts and evidence than a reliance upon any single indication.

Recurrent pains in the right lower abdominal quadrant, associated with tenderness or pressure at the so-called McBurney's point, a pressure often, by the way, made quite sufficient to produce pain in an insensitive and healthy individual, is considered proof positive of a chronic inflammation of the appendix, and the patient is cheerfully recommended to submit himself to the knife, and the appendix is amputated. Lane says,² "There is a remarkable tendency to ascribe to the appendix any tenderness present in or about a line which extends from the anterior superior spine of the right ilium to the umbilicus. Those making this mistake have, however, the satisfaction of knowing that if the appendix is not the cause of the trouble its excision involves practically no risk. It can be removed through a very small hole, the comparative minuteness of which and the very brief convalescence which ensues gratify the operator and the patient, and suggest great skill. The operation frees the patient from all possible danger, and the surgeon explains the

freedom from inflammation of the appendix on the supposition that between the attacks it may be quite normal. While the patient remains on his back during convalescence the absence of symptoms also suggests success, this opinion being only modified by the subsequent course of events." In many of these cases some congestion is found in the appendix, it is true, or it is twisted, or it may contain fecal material, but, if one will examine carefully, he will generally see that the congestion of the appendix is shared in, perhaps even to a greater degree, by the cecum or intestines, often there is a general ptosis, crowding most of the alimentary tract into the pelvis, and frequently there are bands and adhesions; and a history of chronic constipation is almost the rule. What wonder that in such a case the attempts of the bowel to perform its function are attended with pain and discomfort. We all know from personal experience the abdominal pains caused by the efforts of our own bowels to rid themselves of some offending material which we have ingested, and, if the condition of the bowel has become such that all foods are more or less irritant, it is to be expected that chronic pain will be the rule. It is not reasonable to assume that all pain and tenderness in the right lower quadrant must be appendix disease, and that the cecum and bowel are either innocent or only secondary accomplices. It is too much like the tail wagging the dog.

Similarly in regard to the gall-bladder. When operations for the removal of gall-stones became the vogue it was soon noticed that many of the symptoms associated with stones were present when no stones were to be found at operation, resulting, of course, to the great embarrassment of the surgeon. In these days of aseptic technic it was not possible to follow the advice of the old-time genito-urinaryist, never to operate for stone unless one had a stone in his pocket, and some reason had to be given for the unfortunate condition, which was easily found in the inflammation present in these bladders. The inflammation and adhesions around were either ignored or considered as secondary to the gall-bladder condition, and the bowel, a much more likely place for the beginning of the inflammation, was again acquitted.

Again, take the case of the so-called peptic ulcer. The work of Turck some years ago on the experimental production of gastric ulcer by the colon bacillus, and more recently that of Rosenow and others with streptococci, seem to

leave little room for doubt that they are of bacterial causation. Reasoning by analogy, this is what one might expect. We know that the epithelium of the surface of the body is continually suffering from ulcerative lesions as the result of bacterial infection, either with or without previous trauma, and there is no reason why the epithelium of the stomach should have any immunity from similar lesions; in fact, it would be remarkable if it were not injured very often from the character of the material ingested. Fish bones, seeds and stones of fruit, hard crusts of bread, and many similar substances are frequently taken into the stomach, and these cannot fail to be driven against the epithelial cells in the peristaltic contraction waves of the gastric muscles. Trauma should be a frequent occurrence, and the opportunity for a superadded infection is always present, either from bacteria introduced with the food or those derived from the mouth above or the intestines below; so that it is remarkable, not that gastric ulcer is very common, but that it is not more common. Of course, the stomach should destroy bacteria which have gained access to it. That is part of its digestive function, and possibly the reason why this process practically begins with the proteid digestion of the stomach is, that bacteria may be destroyed at the portals, as it were, of the alimentary tract, the function of salivary digestion being, according to Maxwell,³ simply to hydrolyse starch to prevent its adsorption of pepsin. Doubtless the stomach *does* destroy myriads of bacteria, for, with the ordinary methods of preparing and serving food, bacterial contamination must be great. In public eating-places the most vigilant inspection of a zealous health department cannot entirely prevent this, while the methods in vogue in the average household are far from satisfactory. Even if the food is properly prepared and carefully served the consumer often finds means to contaminate it himself by his personal habits. The stomach is a surprisingly sensitive organ, profoundly affected by what we do, and even by what we think. Worry alone will retard or even completely inhibit its function, and if from this or any cause its contents remain within it for an abnormal period of time, bacteria multiply,⁴ and may inflict injuries in their turn, for digestion is as much a function of bacteria as of the stomach. As Eccles says⁵: "If you fail to digest me I will digest you, is the law of every living thing today, as it was in primitive times, when the earth contained only protistan forms." Dur-

ing this eternal conflict the enemies are continually inventing new methods of warfare, and this is the reason for the transformation of form which has been so well shown recently, for this change in form is only the outward and visible sign of the inward and spiritual grace which the bacterium has assumed that he may better attack his enemies and secure his food, and has to be met by some corresponding alteration in the method of defense. Probably there are subtle changes continually being effected in the gastric juice by which it can better digest the different forms of proteids presented to it. The hyperchlorhydria of gastric ulcer may be one method of meeting the enemy by the production of a medium inimical to their growth, and they, in their turn, modify themselves to resist the defensive processes of their host. Given a stomach damaged in any form, and the threshold of its defensive mechanism lowered, bacteria in their turn may digest it, and the production of ulcer is the result. If now an equilibrium of forces can be established, we have a deadlock somewhat like that which exists on the contending lines in Europe. The cells of the host have developed means of protecting themselves against further digestion by the invader, while these in their turn have effectually guarded themselves against counter-digestion. Consequently the chronic ulcer is the result, to continue as such, or to terminate by healing or perforation, according as to whether either develops fresh means of overcoming the other.

That the *causa causarum* of all these conditions is primarily in the bowels is the suggestion of this paper, and that they are part of a general perverted condition of the gastro-intestinal tract, usually accompanied by stasis, in which condition the alimentary canal acts as a focus of infection, infecting other parts, both near and remote, either by direct bacterial extension or conveyance by blood- or lymph-currents, and causing, in addition to the local symptoms, general effects, from the absorption of proteid poisons which fail of elimination or elaboration.

From time immemorial the importance of a regular and sufficient emptying of the bowel has been recognized; but, though the laity has never departed from this attitude of mind, as witness the enormous sale of laxative medicines, the profession has been in a little danger of neglecting it in favor of more localized pathology. It is well recognized among savage races, and I shall never forget the alarm with which an Indian

who once consulted me viewed his having missed his bowel evacuation for several days, and his subsequent gratification and gratitude at the prompt effect of a mixture of castor and croton oils in sufficient quantities.

Latterly, however, the pendulum has begun to swing back, and we are again awakening to the effects of chronic constipation, and are attempting to attack the problem with the scientific precision of modern medicine, seeking to identify its different causes, and to administer the proper remedies, surgical or medical, as the case may be.

But to get the proper conception of chronic constipation or intestinal stasis we must grasp the idea that chronic stasis in the intestinal tract and an imprisoned focus of infection in any other part of the body are essentially the same pathological conditions, giving rise to the same chain of symptoms, and doing exactly the same harm to the body as a whole. In a world of unicellular organisms each individual is continually trying to kill the other for the purpose of food. The ameba engulfs his prey and digests it. When the unicellular becomes multicellular certain cells are set aside for the function of food-digestion, but this function is never entirely given up by the others. When bacteria first obtain lodgment in the body they multiply by utilizing the simple proteids of their host.⁶ If they cannot do this they die out, and are consequently harmless. Like intestinal worms, they are parasites, living upon the food intended for the body tissues. These, however, in self-defense begin to elaborate ferments, which break down the bacterial proteids into simpler substances, elaborating and setting free poisonous products in the process, which cause a general poisoning of the body and produce the symptoms we recognize as an infection.⁷ If a large amount of these are set free in the body at one time we have the violent symptoms of an acute infection, while, if a small amount are continually being liberated, we get the slow poisoning of a chronic infection. If these are walled off, as in an encapsulated abscess, we may have no symptoms, or at least so few that we overlook them. When an abscess is opened and drainage effected, so that the poisons are eliminated, the general symptoms subside, to reappear if at any time drainage becomes insufficient. If the process is continued, the effect of the chronic poisoning is to produce a degeneration of the parenchymatous cells of the organs of the body, as the heart, the liver, and the kidneys, while at the same time the interstitial tissue undergoes a

proliferation. If the bacteria be conveyed by the blood- or lymph-stream to other parts we have metastatic foci with an acute subsidiary infection, aggravating the whole process, until the entire body at last succumbs to an overwhelming quantity of these degeneration products of proteid digestion.

The same thing goes on in the alimentary tract. Here, if I may use such a contradiction in terms, we have a physiologic focus of infection. All other foci of infection are more or less accidental, a condition serious enough when it exists, and to be dealt with effectively and energetically. But the bowel is like the poor, always with us, and always a potential source of the greatest danger. It is a workshop where explosive materials of the greatest potency are continually being manufactured, and where the loyalty of the residents and workers is not simply open to question, but they are known to be ready at any time to turn traitor and destroy the whole community they serve.

The process of proteid digestion is a complex and delicate one. Those we ingest must be broken down into simpler ones, and these in turn to amino-acids, before they can be absorbed. During this enteric digestion the poisonous group found in all proteids is at least partially set free, but under normal conditions, owing to the fact that the poison is not readily diffusible and the body is protected by the walls of the alimentary canal, no harm is done by it, and a further step in the process of digestion breaks up the poison into harmless split products.⁸ If, however, for any reason the various steps in these processes are not perfectly performed the poisons remain. A condition of stasis in the bowel would produce an ideal condition for this, for the continued activity of enzymes is dependent upon the removal of their products. If this is not done they fail to complete their work, and the poisons accumulate. This effect of stasis is well brought out by Murphy and Brooks,⁹ who showed that the secretions of a drained loop of jejunum were non-toxic, while similar secretions from an occluded loop rapidly produced death.

Besides the proteid-degeneration products developed in the ordinary course of digestion we have those produced by the activity of bacteria. As Mendel says¹⁰: "Nor is the story of the rise of the physiology of the amino-acids ended here. These compounds furnish a superior medium for the growth of bacteria, not infrequently yielding products of pronounced toxicity or pharmacologic

potency. A series of amines, ranging from simple forms to complex types, owe their origin to the action of micro-organisms on proteids, both outside of the body and within the alimentary tract. Putrescin, cadaverin, tyramin, histamin, are derived from the amino-acids arginin, lysin, tyrosin, and histidin, respectively. Likewise the widely vaunted alimentary offenders indol and skatol are chargeable to the putrefaction of the tryptophan group in the proteid molecule; phenol and cresol are similarly derived from tyrosin. Thus many of that vague and heterogeneous collection of compounds once convincingly included in the indefinite expression 'ptomains' are doubtless nothing else than the fragments of amino-acids that have fallen sacrifice to bacteria before they could be absorbed intact into the bloodstream."

And the story is not completed yet. The bacteria themselves may be broken down and digested, and the particular degeneration products of their own proteids added to the mass of potential poisons awaiting an opportunity to escape into the general circulation.

As long as the mucous membrane remains normal no absorption takes place. As has been said, in such a case the alimentary contents are practically outside the body. Even in acute intestinal obstruction absorption does not take place until the mucosa is damaged.¹¹ But with an excessive amount of poisons accumulating through a failure of the natural processes of drainage, even if this very failure is not the result of some lesion, and with bacteria multiplying at a rapid rate, one can hardly conceive the intestinal mucosa long remaining normal. Sooner or later, unless drainage is effected and the condition removed, it must give way, like all other tissues, under the strain put upon it. In acute obstruction this damage results largely from the trauma inflicted by the overdistension impeding the mural circulation,¹² and there is no reason why the mechanical and gaseous distension which accompanies chronic stasis should not produce the same effect. The poisons are then no longer held within the intestinal canal, but are disseminated throughout the whole body, producing the familiar symptoms of proteid intoxication, these being the same, no matter from what part of the body the poisons are absorbed. Headache and anorexia, coated tongue, dulling of the senses, weakness, and finally emaciation are equally present, whether the absorption be from the alimentary tract or any other local focus, the severity depending, of

course, on the rate of introduction into the body. Many of these symptoms have been long associated with the alimentary tract in the minds of the laity under the name of biliousness, and generally successfully treated for the time by the administration of a laxative, while the more chronic cases often masquerade under the convenient and comprehensive diagnosis of neurasthenia.

With the establishment of chronic intestinal inflammation and the gut converted into a living culture-tube, the bacteria naturally travel to the communicating organs and adnexa, when we have the familiar conditions of chronic appendicitis, cholecystitis, pancreatitis, or gastric and duodenal ulceration, the association of which has long been noticed and remarked upon. Or they may be carried by the blood- or lymph-currents to distant organs, producing lesions which interfere with their functioning and add to the general symptomatology. Especially is this the case where the organ invaded is one having an internal secretion, as the thyroid. McGarrison's work on the etiology of endemic goitre¹³ strongly indicates that thyroiditis is the result of infection from the alimentary canal, and this is strengthened by Rosenow's successful isolation of bacteria from this gland,¹⁴ the organisms he found, —bacillus Welchii, staphylococci, and streptococci,—all being found in the alimentary tract.

As to the significance of bacillus Welchii, Cammidge says¹⁵: "Opinions differ widely as to the pathogenic powers of bacillus *aërogenes* capsulatus for man, but this appears to be due largely to the fact that organisms isolated from different sources vary much in their virulence. It is certain that some acute diarrheas are associated with the presence of large numbers of the bacillus. Such have been described by Tissier in nursing children, and by Klein and Andrews. Howard has reported instances where superficial necrosis of the mucous membranes of the stomach and intestines was associated with the presence of large numbers of bacillus *aërogenes* capsulatus. Herter considers that the diarrheas common in persons with severe primary anemias may be due to the combined action of this organism and streptococci."

Holmes¹⁶ has found the same bacillus "with marked regularity in the stools of pellagrins in numbers greater than normal," and says: "The theory that bacillus Welchii alone or in symbiosis with another organism in the presence of an excess of carbohydrates, by the production of either butyric acid or a toxin, and its subsequent

absorption, may produce pellagra, is an attractive one. It harmonizes well with the infectious, toxic, and nutritional theories. It explains seasonal variations and the relation of poverty to pellagra. Poverty is usually associated with unhygienic, unsanitary living conditions, a high carbohydrate diet, and a low animal protein diet." Further support is given to this theory by the relationship which exists between the incidence of the disease and the method of sewage disposal, as brought out in an editorial in the *Journal of the American Medical Association* as follows: "Pellagra was largely confined to the unsewered areas of the city (Nashville). . . . In an area of a square mile in which pellagra and typhoid were most prevalent were found 1,500 privies, rarely cleaned and almost never inclosed. . . . The installation of sewers in certain areas was followed by a decrease in the number of cases of pellagra originating therein."¹⁷

The association of chronic constipation with chronic ovaritis was noted by Lane some years ago, and Rosenow and Davis¹⁸ have recently reported the successful isolation of bacteria from these cases. Wilder¹⁹ suggests that "a considerable proportion of diseased ovaries are infected with streptococci rather than with gonococci, and that these streptococcus infections are commonly blood borne from some distant focus," the focus he incriminates being the tonsils, reporting a case in which the connection seems very plain, but if bacteria can travel from the tonsils to the ovaries by way of the blood-stream, still more easily can they travel from the bowel to the same destination, either by way of the blood or by direct extension. Rosenow seems inclined to lay little stress on this source of infection on account of the small number of times he found the colon bacillus present, but the same thing was noticed by Dudgeon and Maybury²⁰ in their study of the bacteriology of the peritoneal exudate in cases of perforation of the stomach and duodenum, where there was no question of the infection coming from the alimentary tract. Possibly the colon bacillus is overgrown by the streptococcus in these cases.

Epilepsy is considered by Reed to be caused by bacterial infection from the bowel,²¹ he having discovered and isolated a micro-organism, first described by Bra, in the alimentary tract and blood of epileptics. He says: "Dilatation of the duodenum, with chronic duodenitis, occurs in 100 per cent of epileptics in whom I have had occasion to make surgical exploration of the upper

zone of the abdomen," and, in a later paper,²² "the bacillus epilepticus invades the system through the alimentary canal, its chief focus being the cecum, from which it reaches the circulation by forced absorption induced by mechanical retardation of the fecal current." This theory of an infectious origin of epilepsy receives indirect confirmation by Spangler,²³ who finds a leucocytosis at the time of and frequently for twenty-four hours following an epileptic seizure, at which times Reed finds the organism to be most abundant in the blood.

That the primary focus of infection by the bacillus tuberculosis is frequently the alimentary tract is well established, a careful summing up of the evidence for which has recently been made by Ravenal,²⁴ who states that "the tubercle bacillus is able to pass through the intact mucous membrane of the alimentary tract," and that "the bacilli pass with the chyle through the lacteals and thoracic duct into the blood, which conveys them to the lungs."

Infection from the mouth and its accessory structures would come well within the title of this paper, but limitations of time and space forbid more than a passing reference to it; in fact, the whole subject of alimentary intoxication is a most fascinating and comprehensive one, and deserves more consideration than can be given it in a paper of this character. A correct understanding of it will probably furnish the solution of many problems which now baffle us. Asthma, urticaria, the anemias, may all be the result of poisoning from proteid-degeneration products absorbed from the bowel. The cirrhoses of the liver may owe their origin more to alimentary intoxication than to alcoholic, and diabetes may be due to an extension of infection to the specific cells of the pancreas, while Metschnikoff and others have long associated senility and arteriosclerosis with infection and proteid absorption from the digestive tract. Even chronic alimentary stasis itself may be the result of infection, for, according to Professor Arthur Keith,²⁵ it is caused by degeneration of neuromuscular bundles in the intestinal walls by which the normal stimuli to regular peristaltic action are transmitted, interference with which produces a block comparable to the condition in heart-block, where we have a degeneration of the auriculoventricular bundle from bacterial or toxic action.

Bearing on this point Robinson has reported a very interesting case of auricular fibrillation caused by poisoning by hydrogen sulphide.²⁶

This gas, as is well known, is quite commonly present in the bowels as a result of putrefactive processes, and, if it can so reduce the conductivity of the muscle fibers in the heart as to produce the localized block which, according to Garrey²⁷ is the cause of auricular fibrillation, it could equally so affect similar tissue in the alimentary canal.

If Keith's theory be proved to be correct, then we have here another vicious circle in disease,—bacterial action causing stasis, stasis aggravating bacterial action, bacterial action again increasing stasis, and so on ad infinitum, the whole, where it is not due to congenital conditions, probably often starting from simple carelessness and inattention to the calls of nature, the result of our departure from the primitive custom of performing the function of defecation when necessary, at any time and in any place, in marked contrast to an exhibition I once witnessed, where the whole of an Indian family of man, woman, and child were all engaged in the same duty, at the same time, in full view of one another and the passers-by.

Coming to the subject of treatment, unfortunately it must be admitted that this at present is in a somewhat chaotic state, though I trust the discussion which follows will throw some light upon it. At least I hope it will tend to halt the hasty and purposeless removal of gall-bladders and appendixes without making provision for the cure of the underlying condition. Of course the principle to be followed in this, as in all foci of infection, is removal of the focus, if possible, and the provision of adequate drainage. If non-surgical measures can re-establish the natural drainage function of the bowel then, of course, non-surgical measures are indicated. But it is obviously useless to expect permanent relief by such treatment as the administration of cathartics where mechanical impediments exist to the free passage of fecal material or degeneration has gone so far that efficient muscular action can no longer be secured. For these cases the new science and art of alimentary orthopedics needs to be developed and acquired.

But one must not be too hasty in concluding that mechanical impediments really exist. Every band or adhesion does not necessarily effect obstruction. Often if the tone of the musculature can be improved the apparent obstruction will prove no obstacle. We should be careful to avoid repeating the mistake we made in the case of the heart, where we concentrated our attention

upon the valve and listened intently for a murmur instead of investigating the functional capacity of the muscle. The tone of this must be improved by attention to habits and hygiene and proper exercise, and the best place to begin is with the children. The public conception of education is at present a one-sided one, and while it rightly tries to secure for every child at least a minimum of mental training it leaves the development of the body largely to chance or haphazard. The drill-master should be as indispensable a part of the scholastic staff as the schoolma'am, and it is to be hoped that the present agitation for preparedness will at least result in securing adequate physical training for both boys and girls, especially, perhaps, girls, for the natural instincts of the boy will partly compensate for the lack of supervision. It is just as necessary to be prepared for the functions of peace as of war, and no nation which neglects the bodily care of its women can be truly efficient.

After all, perhaps, the cure of the vast multitude of victims of chronic intestinal stasis is largely a question of sociology. The good which can be done by such methods as are practised by Wiley Jones, of Portland, cannot be extended to more than a comparatively few because of financial considerations. Not many can afford the necessary time or money for such treatment, and must perforce continue to endure their ills or take such satisfaction as Christian Science or similar cults can afford. Possibly when politics becomes really a desire to secure the greatest good of the greatest number, rather than place and "pork" for its followers, such questions may receive consideration, and the field of the public health department be enlarged so that its activities will include the provision of facilities for the securing of the public health regardless of the nature of the disease.

It is this economic phase of the matter which will often determine the choice between surgical and non-surgical measures. If surgery can offer more rapid relief it will often be the method of choice, even at the cost of increased risk. Long drawn out methods of treatment are never popular, either now or as long ago as the time of Plato, who quaintly remarks: "A smith when he falls sick thinks fit to take from the physician some potion, to throw up the disease or purge it downwards, or by means of caustic or amputation to get quit of the trouble; but, if anyone prescribe for him a long regimen, putting caps on

his head and other such things, he quickly tells him that he hath not leisure to lie sick, nor doth it avail him to live in this manner, attentive to his trouble and negligent of his proper work; and so, bidding such a physician farewell, he returns to his ordinary diet, and, if he recovers his health, he continues to manage his own affairs; but, if his body be not able to support, he dies, and is freed from his troubles."²⁸

How far surgery *can* offer this quick relief is at present sub judice, though such work as is being done by Lynch and Draper, of New York, and others will tend to put the matter upon a more settled basis. Certainly if part of the gut has become so hopelessly damaged that it is a menace to its possessor it *does* seem rational to sacrifice it, as we unhesitatingly do with other organs, and, if a short-circuiting operation will give quick relief, that would seem to be indicated, a good principle being laid down by Eastman²⁹ in this matter that where possible "the purpose of a well-planned short-circuiting operation should be, not to put the colon out of commission, but, by relief of colitis and pericolitis, through drainage, to put the colon back in commission." But such work is the work of the master and not of the tyro, neither for the man of small surgical training nor for him of excellent technic, but immature or poor surgical judgment, for these are capital operations, operations which have not yet found their settled place, and can obtain such place only when done under conditions which allow trustworthy conclusions to be drawn concerning them.

Whatever method of treatment be adopted, however, it will succeed only when it permanently affords adequate drainage, for the proper working of the drainage system of an individual is as important for his well-being as that of a sewage system to a community. If cleanliness is next to godliness, then the water-closet and the

temple are in close proximity, for regular visits to the one are as necessary for the cleansing of our bodies as regular attendance at the other for the purgation of our souls. This was well recognized by the old English writer, who thus summed up the whole rules of life, "Fear God, honor the King, and keep your bowels open," and those of us who are happily blessed with well-ordered bowels, which periodically functionate normally, naturally, and sufficiently, might well, after each daily evacuation, show our appreciation and gratitude, by humbly and thankfully breaking forth in a triumphant "Te Deum Laudamus."

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THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

JANUARY 15, 1917

UNIVERSAL MILITARY TRAINING

Dr. Lucian Howe has recently published a book (G. W. Putnam's Sons) on "Universal Military Education, the Swiss System for the United States," which bids fair to increase interest in physical-exercise methods. It hardly seems possible that a fair-minded man would object to the introduction of a modified military system in every school in the country, nor would it seem possible that any fair-minded man would object to a universal system of physical development which might be carried on outside of schools; and the Swiss method, modified to meet conditions in this country, would certainly tend to improve the race tremendously. It means that every boy would soon grow to like physical exercise and could be taught to continue it daily throughout his life. It is well known that after a man has been through a course of physical gymnastics he can continue them indefinitely. Even if he devotes but ten or fifteen minutes each day, it will keep him physically fit, will relieve him of the common errors, such as constipation and aches and pains in his muscles, and will make him in every way a better boy and a better man. It will improve him morally and mentally, and will make him keener to keep his body clean, so that he will not come in contact with any sort of

uncleanliness. It will make him keener of mind, because it teaches him to think quickly, to see better, and to hear more acutely, and in that way it will enliven his brain and put him in a better mental state than can be done by any other method.

If this system were tried and carried out faithfully for ten years, it would do away with a lot of deformities, and it would correct a number of bad health habits, and put men on their feet in better physical condition. The famous Muldoon has maintained that the majority of men and women take too little exercise, that, if they devoted a fraction of each day to a few simple movements, they would grow fat where they are thin, and thin where they are fat, besides it would key them up to a normal mental state.

Already in boys' schools all over the country they have made a beginning in this direction, and, even though the work is carried on under less skilled men, it is a start in the right direction; and, even though it means military training for a number of years, it requires only a few weeks of each year, and a few weeks of each year mean much to the boy or the man. The military camps that have been established in some parts of the country have overdone the situation. They have taken men of more or less sedentary habits and put them through a course of training that is bad for them,—that is, they overtrain them; but, if they knew better, they would introduce simpler methods, get less over-fatigue, and send the man back home in better spirits and in better health. However, much complaint has come from these camps, and in some cases undoubtedly much injury has been done by incompetent training. They have carried the military question too far and have overlooked the individual who is undergoing the training.

In this connection it might not be unwise to refer to the training of the medical man, who, should he be called upon to do national service, would be better equipped if he were better trained physically. Then, too, this association of medical men and their interest in military questions would be of great value to them and to the country.

Both medical men and laymen can read Dr. Howe's book with interest and learn very much from it. They could learn something that is not necessarily all military, but something that would do them good from every point of view.

HUMILIATING AND DANGEROUS

Some time ago the secretary of the National Education Board of one of the leading religious denominations in America was asked to speak in a Twin City church upon the denomination's attitude toward education, both religious and secular. Naturally, there were some very well-informed people in the audience, and some who were poorly informed, along the lines of the subject of the talk. It is also true that this denomination is not the meekest of all religious denominations, and some of its members are given even to boasting, within proper lines, they think, of the work and the history of the denomination.

The facts and figures presented by the speaker showed the denomination not only not to be a leader in this line of work, but to be a trailer so far behind the other denominations as to be practically out of sight of them. To most of the speaker's audience the revelation was humiliating, and the cause of the condition brought little comfort, even though it explained the deplorable fact.

Minnesota has done a good deal of boasting as to her standing in public health matters, and some, possibly much, of such boasting has been justified by past accomplishment; but what our grand-fathers or our fathers did is poor excuse for what we are not doing, for the results of our failure not to do things in public health matters, or to do them properly, cannot be counteracted in any large measure by what our children or our grand-children may do.

It is interesting to note that systematic public health work in Minnesota began with the organization of the State Board of Health in 1872, only two other states (Massachusetts and California) having like boards at that time. The public health work of the Board attracted national attention in the following year (1873), when its secretary, Dr. Charles N. Hewitt, of Red Wing, was appointed Professor of Public Health in the University of Minnesota, a department of public health having been established in the University at Dr. Hewitt's suggestion.

The forthcoming biennial report of the Board, compiled by its secretary and executive officer, Dr. H. M. Bracken, will present some facts that are both humiliating and alarming. Among such facts are the following:

1. Ten years ago Minnesota and Massachusetts stood, side by side, at the head of the eighteen states doing public health work of which

the United States Public Health Service makes surveys, and thus gives reliable data upon which to make comparisons, but Minnesota now holds *fourth* place in efficiency, Massachusetts, New York, and Pennsylvania leading.

2. In total expenditure for public health work Minnesota stands *eleventh*.

3. In per capita expenditure, Minnesota stands *fifteenth*, leaving only three of the eighteen states below her.

4. In the percentage of the State's total annual revenue devoted to public health work Minnesota stands at the foot of the list. The percentage of total annual revenue used by Pennsylvania, at the head of the list, is eight times the percentage of Minnesota.

How can Minnesota stand *fourth* in the efficiency of her public health work in spite of her standings, indicated above, in her expenditures? An answer has been given, and given very freely, by some Minnesota politicians and some Minnesota newspapers. It is because of the *inefficiency* of the State Board of Health.

Mr. Lincoln was told, and told very freely, by some politicians and newspapers that one of his generals who alone was winning battles, drank whiskey, and should be dismissed. Mr. Lincoln asked for the name of the brand, that he might send an abundant supply to others of his generals.

Public health interests may not be compared with the great moral issue at stake in the Civil War, but such interests stand, next to the greatest of moral issues, above all others; and the people of Minnesota should demand why an *inefficient* board produces such *efficient* results as certified by the United States Public Health Service.

BOOK NOTICES

VENEREAL DISEASES. By J. R. Hayden, M. D., New York. Illustrated with 133 engravings. New York: Lea & Febiger. 1916. Cloth, \$2.50.

This is the fourth edition of this work, and the publishers claim that it has been carefully revised and considerably enlarged. Nevertheless, the author continues to recommend alkalies internally and simple astringents locally in the treatment of acute gonorrhea. The newer silver salts are given very brief mention. Antiblemnorrhagics are administered only in the declining stage.

In the abortive treatment of primary syphilis, Dr. Hayden says that excision and cauterization of the

chancere should never be performed. There are many who disagree with this statement.

He states that hereditary syphilis may be derived from either or both parents. But paternal transmission is generally denied, and many hold that it is a physical impossibility.

In the diagnosis of syphilis of the nervous system, the only laboratory method mentioned is the complement fixation test. We believe that every recent work on the subject should emphasize the value of the Nonne, the cell-count, and the colloidal gold test.

The work is concise and of convenient size.

—CRUME.

GENERAL MEDICINE. Edited by Frank Billings, M. S., M. D., Head of Medical Department of Rush Medical College. Assisted by Burrell O. Raulston, A. B., M. D., Resident Pathologist, Presbyterian Hospital, Chicago. Practical Medicine Series. Cloth. Price, \$1.50. Chicago: Year Book Publishers, 1916.

This series, comprising ten volumes on the year's progress in medicine and surgery, edited by Charles L. Mix, is issued at monthly intervals, and covers the entire field of medicine and surgery. Each volume is complete on the subject of which it treats for the year prior to its publication.

This series is published primarily for the general practitioner, but is so arranged that it enables those interested in special subjects to buy only the parts they desire.

Volume vi is on "General Medicine" and includes a wide range of infectious diseases, diseases of the mouth and esophagus, diseases of the stomach and the intestines, and diseases of the liver, the gall-bladder and of the pancreas.

—STUART.

GYNECOLOGY. Edited by Emilius C. Dudley, A. M., M. D., Professor of Gynecology, Northwestern University Medical School, and Herbert M. Stowe, M. D., Assistant Professor of Obstetrics, Northwestern University Medical School. Volume iv, Practical Medicine Series. Cloth. Price, \$1.35. Chicago: Year Book Publishers, 1916.

This volume gives a survey of gynecologic literature for the year 1916.

This literature covers problems in diagnosis, operative technic, and anesthesia; and disturbances due to injury, infections, new growths, congenital deformities, and constitutional and functional derangements. The editorial notes are most informing, and furnish a balance-wheel of discussion of great value.

The following articles are especially instructive: "Gynecologic Aspects of Backache"; "Incidence of Gall-Stones with Pelvic Disease"; "Auto-transfusion of Blood after Severe Gynecologic Hemorrhage"; "The Choice of an Anesthetic"; "Sterilization of the Skin by the McDonald Solution"; "Treatment of Genital Hemorrhage in Women"; "Retro-deviation a Cause of Backache"; "Relation of Tuberculosis Infection to Gynecologic Affections"; "Gonorrhea in Women"; "Surgical Treatment of Acute Gonorrheal Tube-infection with Quarantine Pack" (editorial note on the same is fair and wise); "Treatment of Acute Pelvic Inflammation"; "Peritonitis Following Acute Ovaritis of Anginal Origin"; "Early Diagnosis of Uterine Carci-

noma"; and "What Do the Newer Methods of Treatment Offer the Patient with Uterine Cancer?"

The book ends with an excellent article on "Sterility."

—LA VAKE.

REPORTS OF SOCIETIES

THE MINNESOTA ACADEMY OF MEDICINE

The Academy met on Dec. 13, 1916, at the Town and Country Club, Dr. Colvin, the president, in the chair.

A number of case-reports were made by Drs. Schwyzer, Corbett, Benjamin, White, Mann, and Colvin.

Dr. Gustav Schwyzer presented two reports as follows:

CASE 1.—Subacute appendicitis. A man, aged 23, employed as a street-car conductor, complained for six weeks of pain in his stomach and abdomen, worse in the afternoon and especially about five o'clock.

On the afternoon of Dec. 5, it became so severe that he could not stand up. Operation was performed the next morning. Upon opening the abdomen a yellowish fluid was observed. The same fluid coagulated and of a yellowish color filled the pelvis. The appendix was found to be adherent; and, since it did not show any membranous deposits, it was thought improbable that it was the source of trouble. It was, however, removed. Palpating the region of the liver, the gall-bladder was found to be normal, but between it and the stomach a few distinct adhesions were to be made out. Upon withdrawing the hand there came away with it a good deal of the turbulent flaky fluid. The abdomen was now closed (with drainage), and another opening was made in the median line below the xiphoid process, and the pylorus was brought into view. The serosa of its anterior wall for an area as large as a silver dollar was covered with a membranous deposit, and on the surface could be made out two minute indentations. Through one of these a Kelly forceps easily passed into the stomach. The hole, as well as the other indentation, was closed with a mattress suture of linen. A thin rubber tube for drainage was introduced to one side of the suture line, and the abdomen was closed. For one week the patient was nourished by enemata. At present, eight days after the operation, he is doing well and taking his food by mouth.

CASE 2.—Adenocarcinoma of the stomach. Male, aged 40. Tumor excised, lower and upper lumen closed; anterior gastro-enterostomy. After excising the tumor, it was noticed that only a small part of the posterior stomach wall had been included; and therefore more was later removed.

The history of the case is briefly as follows: Patient, well until last Christmas. Since then attention has been called to his stomach by pains that came at eleven o'clock in the morning and at five o'clock in the afternoon. Pain was relieved upon eating. There was a gradual loss of weight, the patient weighing eighteen pounds less than he did last January. At the same

time he noticed a loss of strength. The operation took place six days ago. There has been no pain nor vomiting since, and the patient is able to take milk in a predigested form. The pathological specimen shows a tumor, probably adenocarcinoma, as large as a small fist. The microscopic examination has not been completed. The x-ray pictures show clearly a mass springing from the larger curvature and apparently shutting off the lumen of the stomach; yet the man was able the day before the operation to eat a hearty meal without pain or discomfort. An analysis of the stomach contents showed absolute absence of hydrochloric acid.

Dr. Benjamin reported a double ovarian cyst with removal of the uterus and its appendages.

Patient, aged 55. Family history, as well as her own, negative. Of late there has been some gastric disturbance with constipation. Incomplete prolapse of the uterus; backache; frequent urination. A tumor could be palpated that extended beyond the umbilicus, fluctuating and somewhat fixed. The operation was performed on November 2. It was begun with anocain, and was continued under ether. Median incision. Large cyst, which ruptured, discharging about a gallon of yellowish fluid. A hard portion of the tumor, five or six inches square by two in thickness and pedunculated, was removed with the left ovary and tube. A similar, but much smaller, cyst involved the right side, which also was removed. A patch on the sigmoid that resembled carcinoma was cauterized, inverted, and covered with fatty tags. There probably was a perforation at its base. The stump of the uterus was fastened to the fascia in front, and the abdomen closed in the usual way, with drainage. Examination of cysts: double dermoid, possibly malignant.

The first paper of the evening was presented by Dr. Riggs, the subject being "Report of Three Cases of Spinal Cord Disease; Two Tumors; One Cyst; Laminectomy, with Discussion of Exposure of the Spinal Cord." The discussion which followed its reading was entered into by Drs. Jones, Hamilton, Cross, Schwyzer, and MacLaren.

Dr. Mann's presentation of the subject of "Autografts of the Condyles of the Knee, and Fracture with the Joint," was in the form of a pictorial demonstration with twenty-five or thirty lantern slides to furnish the basis of his talk.

The name of Dr. E. B. Daugherty was presented for membership by Drs. Sneve, Freeman, and Wright.

Thirty members and several out-of-town visitors were present.

FRED E. LEAVITT, M. D.,
Secretary.

HENNEPIN COUNTY SOCIETY.

At the annual meeting of the Hennepin County Society last month the following officers were elected for 1917: President, Dr. A. S. Ham-

ilton; first vice-president, Dr. J. C. Litzenberg; second vice-president, Dr. W. H. Aurand; executive committee, Drs. G. D. Haggard and A. S. Fleming (both re-elected); board of censors, Drs. W. E. Rochford and A. N. Bessessen (both re-elected); board of trustees, Drs. A. W. Abbott and E. S. Strout (both re-elected); delegates, Drs. C. C. Weston, H. L. Staples, H. W. Sweetzer, and R. E. Farr (all re-elected); alternates, Drs. T. F. Quinby, A. C. Strachauer, C. R. Nelson, and A. S. Hamilton (all re-elected).

NEWS ITEMS

Custer County, Mont., has opened a new hospital.

Dr. G. F. Walter, of Middle River, has moved to Minneapolis.

Dr. J. J. Deertz, of Ashton, S. D., has moved to Brentford, S. D.

Dr. P. F. Rice is leaving Cannon Ball, N. D., to locate in Solen, N. D.

Dr. W. F. Glasier, of Sisseton, S. D., has moved to Sioux Falls, S. D.

Dr. G. C. Gilbert, of Grand Marais, has moved to Grand Rapids, his former home.

Deer Lodge, Montana, is to have a new hospital, which will cost nearly \$100,000.

Dr. R. E. Cavanaugh died at his home in Duluth on December 24 from heart failure.

Dr. T. J. Devereaux, a graduate of Rush Medical College, has located at Aberdeen, S. D.

Dr. G. R. Freeman, of Willmar, was married on December 27 to Miss Mata O'Neil, also of Willmar.

Dr. R. S. Miles, a former resident of Glencoe, has returned to that place from Excelsior, where he has practiced for several years.

Dr. R. M. Thurlow, who has been a member of the State Hospital staff at Fergus Falls for the past year, has moved to Illinois.

Dr. E. F. Geer, of St. Paul, died at his home on December 24 at the age of 58. Death followed ten days' illness due to a paralytic stroke.

Dr. S. R. Wakefield, a resident of Monticello for over forty years, died at his home in Creswell, Oregon, on December 13, at the age of 96.

The Western Minnesota Hospital of Graceville earned 18 per cent last year. It paid a divi-

dend of 5 per cent, and put \$1,000 into a building fund.

Dr. H. M. Guilford was elected commissioner of health at a recent meeting of the Minneapolis City Council. Dr. Guilford has been acting commissioner for some time.

Dr. G. W. Frasier, of Wahkon, has moved to Hill City, and has taken over the practice of Dr. Alexander Stewart, who will go to New Orleans to do postgraduate work in the New Orleans Polyclinic.

Over two thousand cases of all sorts were examined at the State Public Health Laboratory at the University of North Dakota during the month of November. Last year during the same time the number was 755.

The report of the medical survey of Minneapolis, made by Dr. George B. Young of the U. S. Public Health Service, shows the usual effect of the political control of medical matters, which is always deplorable.

The sale of Christmas Red Cross Seals in Minnesota was the largest for the year just closed in the history of their sales. About \$50,000 will be realized, one-half of which goes to local organizations and one-half to the State Association. Rural visiting nurses will get about \$13,000 for their work.

The Freeborn County Society held its annual meeting last month at Albert Lea. The following officers were elected for the current year: President, Dr. J. P. von Berg, Albert Lea; vice-president, Dr. W. L. Palmer, Albert Lea; treasurer, Dr. J. R. Nannestad, Albert Lea; secretary, Dr. R. G. Stevenson, Albert Lea.

At the annual meeting of the Goodhue County Society held on January 4 several papers were read, and the following officers were elected: President, Dr. H. T. McGuigan, Red Wing; vice-president, Dr. J. A. Gates, Kenyon; secretary-treasurer, Dr. C. A. Fjelstad, Red Wing; delegate, Dr. M. W. Smith, Red Wing; alternate, Dr. M. H. Cremer, Red Wing.

At the annual meeting of the Upper Mississippi Society, held January 2, at Brainerd, the following officers were elected: President, Dr. G. W. Beach, State Sanitorium, Walker; vice-president, Dr. John A. Evert, Brainerd; secretary-treasurer, Dr. P. L. Berge, Brainerd; censor, Dr. F. H. Knickerbocker, Staples; delegate, Dr. Paul E. Kenyon, Wadena; alternate, Dr. L. M. Roberts, Little Falls.

The *Medical Review of Reviews* has done all medical men a real service by bringing together, in the form of a symposium on the medical profession, the opinions of a large number of distinguished laymen throughout the world. Its January issue is given over to this brilliant symposium. It sells for twenty-five cents, and it should be read by every physician in America.

At the annual meeting of the Seventh District Society of South Dakota, held last month at Sioux Falls, the following officers were elected for 1917: President, Dr. H. R. Hummer, Canton; vice-president, Dr. J. G. Parsons, Sioux Falls; secretary-treasurer, Dr. Goldie E. Zimmerman (re-elected), Sioux Falls. The Society meets the first Tuesday of every month at Carpenter Hall, Sioux Falls.

Dr. Arthur Curtis Rogers, for thirty-one years superintendent of the Minnesota School for Feeble Minded and Colony of Epileptics, at Faribault, died on January 2 at the age of 60. Dr. Rogers has a record of service and usefulness, not only in Minnesota, but in the entire country, equalled by few men. He was a pioneer in his work, and indefatigable in his efforts to improve the conditions of the dependent classes. He held a very high rank among American specialists in the lines of work in which he engaged from the day of his graduation in medicine, which was in 1883.

A very important conference on medical preparedness was held in Washington on January 7. The dean of every medical school in America, with one member of its medical faculty, met with the Secretary of War, the Council on Preparedness, and the medical officers of the U. S. army and navy. Only two resolutions were introduced, and they were unanimously passed. Dean V. C. Vaughan, of Ann Arbor, introduced a resolution requiring universal military training, and Dr. A. A. Law, of Minneapolis, introduced the other resolution, to the effect that a medical officer of the regular army be stationed in every medical school in America, to give an intensive course in military medicine and surgery to fit all medical students to be, in an emergency, medical officers in the army. The course would be compulsory; and, if all such students joined the Medical Reserve Corps, upon graduation, the army and navy would soon be thoroughly equipped, as the number of graduates from medical schools this year alone will be 3,500. Dean Lyon of the University Medical School attended the conference.

LOCUM TENENS WANTED

I desire some one to take my place in a small Minnesota town for two months. Will pay \$125 a month and furnish room. Address 443, care of this office.

PRACTICE FOR SALE

A \$5,000 practice for sale in a town of 500 in South Dakota. Here is a good opportunity for the right man. Address C. Estile, 610 East 7th Avenue, Mitchell, S. D.

FOR SALE

A complete set of 11 volumes of Messages and Papers of Our Presidents up to and including Taft's administration. For further particulars address Dr. Wm. Friesleben, Sauk Rapids, Minn.

LOCUM TENENS WANTED

A physician registered in Minnesota, to fill a vacancy of assistant for eight weeks, beginning at once. Small mining town in Northern Minnesota. Hospital in connection. Address 444, care of this office.

ASSOCIATION WANTED

A physician and surgeon of ten years' experience wishes to associate either part or full time with an older man in Minneapolis. Strictly ethical and good worker. Address 440, care of this office.

PHYSICIAN WANTED

A doctor, young or middle aged, at Henry, S. D. Population, 500. Best farming country in the state. No opposition and eleven miles to nearest physician. Write at once. H. A. Sasse, Druggist, Henry, S. D.

OFFICES FOR RENT

A suite of 5 rooms, artistically arranged and decorated, suitable for a physician or dentist, will be for rent in the Essex Building, Nicollet and Tenth Street, shortly after Jan. 1. Rent, \$35.00. Address 437, care of this office.

WANTED: PRACTICE OR PARTNERSHIP IN MINNESOTA

Must pay \$3,600 cash a year and bear investigation. Town must have electric lights and waterworks. Place near Twin Cities or on Iron Range given preference. Write full particulars. Address 451, care of this office.

ASSISTANTSHIP TO A SURGEON WANTED

Assistantship wanted to surgeon, corporation, hospital, or general practitioner, by an experienced physician, who is a competent anesthetist and radiographer. Has had special training in obstetrics and emergency surgery. Has clean habits, good personality, best of references. Address 449, care of this office.

PRACTICE FOR SALE

In North Dakota, \$5,000 practice and modern residence. Railroad town of 800. Good schools, churches, roads, territory, and pay. One competitor. Competent man can make price asked in one year. I did so. Price, \$3,300. Ford roadster, optional. Office equipment included in above price. Address 452, care of this office.

POSITION IN A PHYSICIAN'S OFFICE WANTED

A fine stenographer with six years' experience in a physician's office and as assistant, desires to become permanently associated with a physician in Minneapolis having a large practice. Can give good references. Address 448, care of this office.

HOSPITAL AND PRACTICE FOR SALE

Hospital and practice in northern Minnesota town for sale. All modern equipment in hospital and office including x-ray and accessories. Practice worth \$10,000 during last year. Good opening for real live man who can do surgery. Have a larger surgical field in view, and want to change at once. Address 441, care of this office.

FOR SALE

A \$5,000 practice, office equipment, and modern home in northern Minnesota town of 800. Only physician. Established eleven years. Large territory. Collections over 90 per cent. Practice can be increased from 25 to 40 per cent with a little surgery. Want to retire from general practice. Part cash, balance on time. Will not sell except to capable man. Scandinavian or German will help, though not necessary. Address 442, care of this office.

PHYSICIAN WANTED

A first-class physician to take over my Minnesota practice averaging over \$3,600 cash for past four years. Live town with over a million and a half pay-roll; good schools and churches; Y. M. C. A.; city water and sewers; paved streets; electric lights; etc. Chance for competent surgeon almost to double income. I have a splendid offer of contract work elsewhere, and will really sacrifice holdings here for half value in order to make quick sale. One thousand dollars cash will handle, balance on easy payments out of practice. Don't waste my time unless you have cash and mean business. Address 447, care of this office.

PRACTICE FOR SALE

A Minnesota practice, with residence and office, in a rapidly growing town of 600 in southern part of state for price of property. Residence, optional. Three-room office on corner lot adjoining home, \$1,500. Two railroads, two churches, good high school; population, 600. Practice for ten years has averaged \$4,000 to \$4,500 without surgery. Collections 98 per cent. Germans and Scandinavians, with Scandinavians predominating. Physician doing surgery will double practice. Competition just right. Reason for selling, postgraduate work, and excellent opportunity to associate with group of physicians in larger town. Address 445, care of this office.

DOCTOR

Doctor: If you want practical postgraduate work during the fine season in the delightful city, write for particulars. Thirtieth annual session opens September 25, 1916, and closes June 9, 1917. New Orleans Polyclinic, P. O. Drawer 770, Graduate School of Medicine, Tulane University of Louisiana.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Fuerperal Septicemia	Accidental Deaths
Ada	1,253	1,432	1															
Albert Lea	4,500	6,192	9			1												2
Alexandria	2,681	3,001	7															
Anoka	3,769	3,972	1															
Austin	5,474	6,960	4															
Barnesville	1,326	1,353	0															
Bemidji	2,183	5,099	7					1										
Benson	1,525	1,677	3															
Blue Earth	2,900	2,319	2	1														
Brainerd	7,524	8,526	12			2												
Breckenridge	1,282	1,840	5	1														
Canby	1,100	1,528	4	1														1
Cannon Falls	1,239	1,385	0															
Chaska	2,165	2,050	2															
Chatfield	1,426	1,226	0															
Cloquet	3,074	7,031	5	1	1													1
Crookston	5,359	7,559	7	1													2	1
Dawson	962	1,318	1															
Detroit	2,060	2,807	4															
Duluth	52,968	78,466	86	8	6	6	1	0	0	0	2	0	1	0	7	8	0	10
East Grand Forks	2,077	2,533	0															
Ely	3,572	3,572	4	1		1												
Eveleth	2,752	7,036	6															1
Fairmont	3,440	2,958	2															
Faribault	7,868	9,001	8	2												1	2	
Fergus Falls	6,072	6,887	5													1	1	2
Glencoe	1,788	1,788	1															
Glenwood	1,116	2,161	4			1												
Granite Falls	1,454	1,454	0															
Hastings	3,811	3,983	5														1	
Hutchinson	2,495	2,368	3															
International Falls		1,487	3			1												
Jordan	1,270	1,151	2		1													
Lake City	3,142	3,142	4															
Le Sueur	1,937	1,755	2	1													1	
Little Falls	5,774	6,078	6			1											1	
Luverne	2,223	2,540	2														1	
Madison	1,336	1,811	2														1	
Mankato	10,559	10,365	17	1		2											2	2
Marshall	2,088	2,152	1															1
Melrose	2,591	2,591	0															
Minneapolis	202,718	301,408	354	30	3	13	5	1	1	0	1	2	0	5	20	36	0	22
Montevideo	2,146	3,056	4														1	
Montgomery	979	1,267	1															
Moorhead	3,730	4,840	5	2														
Morris	1,934	1,685	1															
New Prague	1,228	1,554	2	1														
New Ulm	5,403	5,648	7	1														
Northfield	3,210	3,215	5			1										1		1
Ortonville	1,247	1,774	2														2	
Owatonna	5,561	5,658	2														1	
Pipestone	2,536	2,475	6															
Red Lake Falls	1,666	1,666	1															
Red Wing	7,525	9,048	9														1	
Redwood Falls	1,661	1,666	2															1
Renville	1,075	1,182	0															
Rochester	6,843	7,844	46			1		1								1	12	2
Rushford	1,100	1,011	2														1	
St. Charles	1,304	1,159	4	2														
St. Cloud	8,663	10,600	13	1		1												
St. James	2,102	2,102	1															
St. Paul	163,632	214,744	193	14	6	9	2	0	0	0	0	1	0	1	6	20	0	5
St. Peter	4,302	4,176	5															
Sauk Centre	2,154	2,154	1															1
Shakopee	2,046	2,302	1	1														
Sleepy Eye	2,046	2,247	3														1	
South St. Paul	2,322	4,510	4														1	
Staples	1,504	2,558	0															
Stillwater	12,318	10,198	9	1	1													
Thief River Falls	1,819	3,174	2															1
Tower	1,111	1,111	0															
Tracy	1,911	1,826	1															
Two Harbors	3,278	4,990	3															
Virginia	2,962	10,473	12			1										2	1	
Wabasha	2,622	2,622	4	1														1
Warren	1,276	1,613	1														1	
Waseca	3,103	3,054	1															
Waterville	1,260	1,273	0															
West St. Paul	1,830	2,660	0															
Willmar	3,409	4,135	5	1														
Winona	19,714	18,583	19	3			1					1					1	
Winthrop	813	1,043	0															
Worthington	2,386	2,385	3														1	

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	1												1			
Altkin	1,719	1,638	0															
Akeley			0															
Appleton	1,184	1,221	2															
Belle Plaine	1,121	1,204	1	1														
Blwabik		1,696	3	1														
Bovey		1,377	1															
Browns Valley	721	1,058	1															
Buffalo	1,040	1,227	1															
Caledonia	1,175	1,372	2															
Cass Lake	546	2,011	3															
Chisholm		7,684	4	1		1										1		
Coleraine		1,613	0															
Delano	967	1,031	0															
Farmington	733	1,024	0															
Fosston	864	1,055	2															
Frazee	1,000	1,645	4															
Grand Rapids	1,428	2,239	7															
Hibbing	2,481	8,832	1															
Jackson	1,756	1,907	2	1											2	1		1
Janesville	1,254	1,173	2	1											1	1		
Kenyon	1,202	1,237	0															
Lake Crystal	1,215	1,038	1															
Litchfield	2,280	2,333	1															1
Long Prairie	1,385	1,250	1													1		
Madelia	1,272	1,273	2															1
Milaca	1,204	1,102	1															
Mountain Lake	959	1,081	1												1			
Nashwauk		2,080	0															
North Mankato	939	1,279	0															
North St. Paul	1,110	1,404	0															
Osakis	917	1,013	5			1										1		
Park Rapids	1,313	1,850	3	1														
Pelican Rapids	1,033	1,019	0															
Perham	1,182	1,376	0															
Pine City	993	1,258	3													1		
Plainview	1,038	1,175	1															
Preston	1,278	1,193	0															
Princeton	1,319	1,555	4			2										1		
St. Louis Park	1,325	1,743	1			1												
Sandstone	1,189	1,818	0															
Sauk Rapids	1,391	1,745	1															
South Stillwater	1,422	1,343	0															
Springfield	1,511	1,482	1			1												
Spring Valley	1,770	1,817	1															
Wadena	1,520	1,820	2															
Wells	2,017	1,755	0															
West Minneapolis	2,250	3,022	2															1
Wheaton	1,132	1,300	0															
White Bear Lake	1,288	1,505	0															
Windom	1,944	1,749	0															
Winnebago City	1,816	2,555	2															
Zumbrota	1,119	1,138	1	1														
STATE INSTITUTIONS			1															
Anoka, Asylum			0															
Faribault, School for Blind			0															
Faribault, School for Deaf			0															
Faribault, School for Feeble Minded			2															
Fergus Falls, Hospital for Insane			11	2		1												
Hastings, Asylum			0															
Minneapolis, Soldiers' Home			5															
Owatonna, School for Dependents			0															
Red Wing, State Training School			0															
Rochester, Hospital for Insane			7															
Sauk Centre, Home School for Girls			0															
St. Peter, Hospital for Insane			13	1		1								1		1		
St. Cloud, State Reformatory			0															
Stillwater, State Prison			0															
OTHER PARTS OF STATE			643	44	14	34	2	6	6	0	5	8	2	4	36	59	0	49
Total for state			1720	130	33	82	13	8	7	0	8	13	3	15	92	173	0	109

*No report received. REGISTRAR not doing his duty.

117 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

STILL ROCK SPA, WAUKESHA, WIS.

Owing to the large and increasing patronage the Still Rock Spa is making extensive alterations to increase and better its accommodations. In its personnel and staff it remains the same, desiring always to maintain an aspect and spirit as homelike as possible. Diseases of metabolism, diabetes and Bright's disease are treated along modern lines with the benefits derived from more than twenty-five years' experience.

THE BEEBE LABORATORIES

The literature of the past year shows that there is great danger, especially in large institutions with complete laboratories, of subordinating bedside clinical evidence to laboratory evidence in the diagnosis of disease. The physician who is not equipped to do the more difficult work of the laboratory, relies largely upon his clinical work, and calls upon the public laboratory when he needs it.

Dr. W. L. Beebe, of St. Paul, was a pioneer in this work, and the Beebe Laboratories have the confidence of the profession in a high degree and throughout the country. Their service is well-nigh perfect as to time and scientific accuracy; and no physician need hesitate to put absolute confidence in the findings of any analysis made by them.

THE HYGEIA HOSPITAL

This institution, occupying a beautiful building on Michigan Boulevard, Chicago, is devoted to the treatment of drug addictions and alcoholism, and is under the supervision of Dr. Wm. K. McLaughlin. It has a record for complete cures rarely equalled, and it has made this record by methods universally approved as correct and scientific by the medical profession. It is unfortunate that many physicians adopt in this line of work methods that would discredit some quacks. Dr. McLaughlin prefers to have his patients referred to him by medical men rather than get them by unprofessional methods, for in this way medical men can, and will, watch his cases and verify his results.

It is worth while for the physician who has an obstinate case and does not wish to treat his patient at home, to correspond with Dr. McLaughlin.

CHIPPEWA WATER

No lake or river water, even though filtered and purified by chemical processes, can equal in taste, in purity, or in health-maintaining qualities, a water taken from the deep layers of sandstone in a rural district where every possible source of contamination is absent; and this is especially true of such water when handled by modern machinery with modern sanitary appliances, such, for instance, as porcelain-lined storage and transportation (railway) tanks, and glass bottles automatically filled and sealed.

The Chippewa Spring Water is a water for table use, for it comes from the deep sandstone of Wisconsin, and reaches the table without exposure to the air and always

without touching the surface of a conveyor that is not absolutely sterile.

This water is marketed by the Chippewa Springs Corporation of Minneapolis.

THE SEQUELÆ OF LA GRIPPE

Among all of the various acute and exhausting illnesses that afflict mankind, there is none that so generally results in distinct prostration as epidemic influenza, or la grippe. Even the grippal infections which are uncomplicated or unaccompanied by serious organic changes are more than apt to leave the patient in a thoroughly devitalized condition after the acute febrile symptoms have subsided. It is for this reason that the treatment of la grippe convalescence is of special importance. The anemic, debilitated, depressed patient requires a systemic "booster" that will not only stimulate but revivify and reconstruct. It is distinctly wise, in such cases, to commence vigorous tonic treatment as early as possible, preferably by means of Pepto-Mangan (Gude), the hemic builder and general reconstituent. This standard hematinic increases the vital elements of the circulating blood and, by increasing the appetite and improving the absorptive and assimilative functions, quickly restores both hemic and general vitality.

JORDAN SULPHUR SPRINGS AND MUD BATH SANITARIUM

This institution has grown from a very small beginning to a sanitarium that treats during the year a very large number of patients; and it has done this wholly on the efficiency of elimination and sulphur medication. A patient rarely takes this treatment without marked improvement, and a very large percentage of all who take it are completely cured. Such is the indisputable record of the Jordan Sanitarium.

The improvement in patients is generally very marked within a week; and the average stay of patients at the institution is remarkably short when the conditions are considered. Many enter it in pain and on litters or crutches, and go out free from pain and with light steps.

The prices for treatment and board are very low, markedly so in view of the almost certain results obtained by patients.

VEST-POCKET REFERENCE BOOK ON VACCINE AND SERUM THERAPY SENT PHYSICIANS ON REQUEST

What physician would not welcome a convenient vest-pocket reference book on antitoxins, serums, and vaccines (bacterins)? A compendium of this kind is distributed to physicians, without charge, by Eli Lilly & Company. It contains, in addition to a price-list of biological products, brief instructive sections on infective and infectious diseases, the development of immunity, specific therapy, serums, and antitoxins, anaphylaxis, indications, dosage, and keeping qualities of biologicals. The book is thoroughly cross-indexed, and is designed to supply answers to the practical questions that arise daily in the administration of biological products.

This handy manual was prepared for free distribution, and will be found a convenient vest-pocket refer-

ence work. It is printed on thin paper, occupies little space, and contains much information of value on vaccine and serum therapy. A copy will be sent without charge to readers of this journal on request made to Eli Lilly & Company.

HARD DRY FECES

"Interol" is suggested as a means of overcoming this difficulty—and a hard dry fecal mass is indeed a difficulty—because "Interol" has several points in its favor.

In the first place, it becomes part of the intestinal contents as they emerge from the cecum into the colon. It is thus mixed with them, and covers them. Under its influence, feces cannot become hard and dry. The colon may absorb all the water it wants, but "Interol" remains with the mass all through its colonic and rectal journey, finally lubricating it past the sphincter and during the defecation act.

By so doing, straining at stool, which is an invariable accompaniment of hard dry feces, no longer is a necessity, and herein lies the value of "Interol," not only as a fecal softener and lubricant, but as a prophylactic measure in the prevention of the many *physical* sequelae of straining at stool, including hernia, hemorrhoids and prolapse (rectal and uterine).

A 4-page circular on "Hard Dry Feces" will be sent on request. Also a 4-page circular on "Straining at Stool," or Interol-lubrication booklet. Van Horn and Sawtell. 15-17 East 40th St., N. Y. City.

THE MULFORD LABORATORIES

The growth and the work of the Mulford Laboratories are set forth in the *Mulford Digest*, Vol. 3, No. 3, which is a really informing and very interesting story. Probably few doctors realize the marvelous growth and, possibly, the great value of the laboratory products whose history covers so short a period.

This brochure has contributions of real and lasting value, such, for instance, as that of Garbat, of the Paris Pasteur Institute, on typhoid vaccine, with others of equal value.

These great laboratories are doing a work for scientific medicine whose value can scarcely be estimated.

The scientific research work done in the commercial laboratories, or, perhaps we should say, by commercial houses, in America has no equal in any other country in one very important respect: the research men in these establishments are never hampered or controlled by commercial considerations. They are bid to get scientific results almost regardless of cost.

The *Mulford Digest* will be sent free to any physician, and is well worth reading.

THE MINNEAPOLIS MILK COMPANY

The distribution of milk in a large modern city, to meet the exacting requirements of city health officials and a medical profession ever alert in the interests of public health, demands business ability of a high order and unquestioned integrity in order continuously to enforce the many and minute details essential in handling a product so easily contaminated.

The day of the small producer and distributor combined has passed; the needs of a city in its milk supply cannot be met in this way.

The Metropolitan Milk Company of Minneapolis

now buys the milk of hundreds of dairies, and its distributing system is as ingenious and complete as scientific management and large capital can make it. It is indeed rare that one now hears of the morning's milk being either sour or dirty. Besides being properly sterilized and kept absolutely clean and at the proper temperature in all kinds of weather, it maintains the required standard of richness. In short, it is a well-nigh perfect city milk, and may be prescribed by physicians with the assurance that its quality and character remain constant.

RADIOGRAPHY

Different parts of the human body vary in density and require different degrees of penetration from an x-ray tube to give a contrasting negative. The penetration of the rays from an x-ray tube is measured by the spark it will back up at the parallel spark gap with which x-ray machines are equipped.

Through the co-operation of manufacturers of x-ray apparatus, x-ray tubes and x-ray plates, especially printed exposure tables have been brought out which show that all radiographic work on the human body can be done with tubes having a penetration sufficient to back up a spark from $5\frac{1}{2}$ to 7 inches.

Naturally machines to be capable of doing *all* radiographic work must have a spark gap of *not less* than seven inches.

Elsewhere in this issue The Wm. Meyer Co. are describing their latest x-ray machine, capable of all radiographic work, filling a long felt want for a high power, high grade machine at a moderate price.

Those who are interested in obtaining the exposure table mentioned, or the catalogue describing the apparatus, had better write The Wm. Meyer Co., Box 509, Minneapolis, Minn.

THE BATTLE CREEK SANITARIUM

Blood analysis has yielded so important diagnostic results that it is now widely used in the Battle Creek Sanitarium. The services of one chemist and his assistant are now exclusively given to this work. About 20 c.c. of blood are taken from the arm of the patient, potassium oxalate being added to prevent clotting. Disturbance of the renal functions commonly attends many diseases, and this is revealed in the contents of the blood. Constituents chiefly sought for as being most significant are total non-protein nitrogen, uric acid, urea nitrogen, creatinin, and sugar. The findings have been especially valuable in detecting kidney disease. Urinary analysis may reveal only one-half of the incipient cases, while blood analysis makes certain the diagnosis in the other 50 per cent. In diabetes, this new test is particularly important as determining accurately the degree of the disturbance of metabolism, while it also enables the physician to learn exactly the effect of the treatment he is giving. Partial tests, such as finding only the uric acid or total non-protein nitrogen, are not always satisfactory. In addition the urea and creatinin should be determined.

Another test of value is the finding of the reserve alkalinity or acidosis of the blood; as this condition accompanies many kinds of disturbances of metabolism, and in some cases indeed is the most important to be recognized by the test and looked after by treatment.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, FEBRUARY 1, 1917

No. 3

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Minnesota State Medical Association

DISTRICT AND COUNTY ROSTER

FIRST DISTRICT

COUNCILOR, C. E. DAMPIER.....Crookston

Clay-Becker County Medical Society

Regular meetings, last Monday in January, April, July, and October

Annual meeting last Monday in October

PRESIDENT
Thornby, H. J.....Barnesville
SECRETARY
Briggs, F. W.....Moorhead
Aborn, W. H.....Dilworth
Adkins, C. M.....Grygla
Archibald, F. M.....Mahnomen
Awty, W. J.....Moorhead

Barton, E. R.....Frazee
Carman, J. E.....Detroit
Darrow, Daniel C.....Moorhead
Gosslee, G. L.....Moorhead
Gunderson, R. M.....Lake Park
Hagen, Ole J.....Moorhead
Haight, G. G.....Audubon
Hoit, Edward E.....Detroit
Humphrey, E. W.....Moorhead

Kaess, A. J.....Fargo, N. D.
Larsen, O. O.....Detroit
Leach, W. D.....Callaway
Lowe, L. M.....Glyndon
Meighen, J. W.....Ulen
Simison, C. W.....Hawley
Verne, V. E.....Moorhead
Weeks, L. C.....Detroit
Winberg, O. K.....Lake Park

Park Region District and County Medical Society

Wilkin, Otter Tail, Douglas, and Grant Counties

Regular meetings, second Wednesday in January, April, July, and October

Annual meeting, second Wednesday in January

PRESIDENT
Berthold, J. L.....Perham
SECRETARY
Randall, A. M.....Ashby
Baker, A. C.....Fergus Falls
Boyd, L. M.....Alexandria
Boysen, Peter.....Pelican Rapids
Burnap, W. L.....Fergus Falls
Cole, A. B.....Fergus Falls
Drought, W. W.....Fergus Falls
Esser, John.....Perham

Estrem, C. O.....Fergus Falls
Farrage, Jas.....Breckenridge
Freeborn, J. A.....Fergus Falls
Gilkinson, A. J.....Osakis
Gosslee, A. F.....Pillager
Hand, W. R.....Elbow Lake
Haskell, A. D.....Alexandria
Haugan, O. M.....Fergus Falls
Haugen, G. T.....Battle Lake
Hoffmann, J.....Henning
Kittelston, T. N.....Fergus Falls
Lee, W. A.....Underwood
Leibold, H. H.....Parker's Prairie

Lyng, John A.....Fergus Falls
Meckstroth, C. W.....Brandon
Naegeli, Frank.....Fergus Falls
Otto, H. C.....Vergas
Rothnem, T. P.....Wendell
Ruud, H. O.....Evansville
Ruud, M. B.....Alexandria
Serkland, J. C.....Rothsaw
Sherping, O. Th.....Fergus Falls
Swanson, Roy E.....Alexandria
Vigen, J. G.....Fergus Falls
Wray, W. E.....Campbell

Red River Valley Medical Society

Polk, Marshall, Pennington, Red Lake, Norman, Kittson, and Roseau Counties

Regular meetings, third Thursday in March, June, September

Annual meeting second Thursday in December

PRESIDENT
Norman, J. F.....Crookston
SECRETARY
Kirsch, Ralph L.....Crookston
Anderson, W. S., Grand Forks,
.....N. D.
Arneson, Thomas.....Climax
Bertelsen, O. L.....Crookston
Blegen, H. M.....Warren
Borreson, B.....Warren
Bowers, J. T.....Gully
Bratrud, O. E.....Fertile
Bratrud, Theo. Grand Forks, N. D.
Clair, J. B.....Winsted
Dahlquist, G. W.....Lancaster
Dampier, C. E.....Crookston
Delmore, J. L.....Roseau
Douglass, J. E., Thief River Falls

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Dunlon, A. H.....Crookston
Froehlich, H. W.....
.....Thief River Falls
Gambell, F. H.....Thief River Falls
Guilfoyle, J. P.....Stephens
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Haugseth, Enoch.....Twin Valley
Helmark, J. H.....Hawley
Hieber, H. G.....Thief River Falls
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Hollands, Wm. H.....Fisher
Holte, H.....Crookston
Johnson, Geo. L.....Newfolden
Just, A. A.....Crookston
Kahala, Arthur.....Crookston
Kirk, G. P.....E. Grand Forks

Kjelland, J. S.....Crookston
Lemieux, Israel.....Red Lake Falls
Morley, G. A.....Crookston
Muir, J. B.....Roseau
Nelson, H. E.....Crookston
Ohnstad, J.....McIntosh
Olson, O. H.....Erskine
Overend, K. V.....Kennedy
Randolph, Wilson.....Crookston
Risjord, J. N.....Fertile
Smith, H. W.....Crookston
Swanson, Cephas.....St. Hilaire
Swedenburg, A. W.....Gully
Tessier, W. O.....Oklee
Vistaunet, P. S.....Shelly
Watson, N. M.....Red Lake Falls
Wattam, G. S.....Warren
Wilkinson, J. C.....Red Lake Falls
Wood, J. R.....Hallock

West Central Minnesota Medical Society

Pope, Stevens, Traverse, and Big Stone Counties

Regular meetings, January, April, July, and October

Annual meeting in October

PRESIDENT
Ransom, M. L.....Hancock
SECRETARY
Fitzgerald, E. T.....Morris
Bolsta, Charles.....Ortonville
Caine, C. E.....Morris

Christenson, C. R.....Starbuck
Eberlin, E. A.....Glenwood
Else, J. R.....Glenwood
Ewing, C. F.....Wheaton
Gibbon, L. L.....Lowry
Hayes, Edward W. Brown Valley
Hayes, James M. Brown Valley
Karn, B. R.....Ortonville

Leland, J. T.....Herman
Leuty, Amos.....Morris
Linde, Herman.....Cyrus
Melzer, G. R.....Hoffman
Oliver, C. I.....Graceville
Peterson, Henry E.....Chokio
Randall, B. M.....Graceville
Weir, J. D.....Beardsley
Whittemore, J. G.....Donnelly

SECOND DISTRICT

COUNCILOR, J. G. MILLSPAUGH.....Little Falls

Aitkin County Medical Society

Regular meetings, first Monday in each month

Annual meeting in December

PRESIDENT

Graves, CarltonAitkin

SECRETARY

Ratchliffe, J. J.....Aitkin

Catlin, T. J.....Palsade
Collie, H. G.....McGregor
Kelly, B. W.....Aitkin

Upper Mississippi Medical Society

Beltrami, Cass, Crow Wing, Hubbard, Koochiching, Morrison, Todd, and Wadena Counties

Regular meetings, first Tuesday in January, April, July, and October

Annual meeting in January

PRESIDENT

Desmond, M. A.....Eveleth

SECRETARY

Berge, P. L.....Brainerd

Allen, F. H.....Staples
Beach, Geo. W.State Sanatorium
Beise, R. A.....Brainerd
Cabot, Verne S.....Bowerville
Christie, G. R.....Long Prairie
Corrigan, J. E.....Spoonerville
Courtney, Walter.....Brainerd
Davis, L. A.....Wadena
Doupe, R. G.....Upsala
Evert, J. A.....Brainerd
Gilmore, R. T.....BemidjiGroves, A. F.....Brainerd
Healy, R. T.....Pierz
Holst, C. F.....Little Falls
Holst, J. B.....Little Falls
Houston, C. A.....Park Rapids
Ide, A. W.....Brainerd
Johnson, E. W.....Bemidji
Johnson, O. V.....Sebek
Knickerbocker, Frank H.....Staples
Knight, S. G.....Randall
Knights, F. A.....Pequot
Koch, John.....Blackduck
Laney, R. L.....Brown Valley
Lowthian, G. H.....Fulton, S. D.
McCoy, J. E.....Ironton
Marcum, E. H.....Bemidji
Miller, W. A.....New York Mills
Millspaugh, J. G.....Little Falls
Nicholson, Joseph.....BrainerdNordin, C. G.....Brainerd
Parrott, B. W.....Long Prairie
Pengelly, E. J.....Ironton
Pierce, C. H.....Menahga
Reimestad, C. S.....Brainerd
Roberts, L. M.....Little Falls
Sanborn, C. R.....Bemidji
Sewall, G. M.....Deerwood
Smith, B. A.....Crosby
Smith, Wm. H.....Cass Lake
Thabes, J. A.....Brainerd
Van Valkenburg, B. F.....
.....Long Prairie
Watson, A. M.....Royalton
Wilcox, F. L.....Walker
Will, W. W.....Bertha
Wiltout, I. Geo.....Swanville
Withrow, M. E.....
.....International Falls

THIRD DISTRICT

COUNCILOR, W. A. DENNIS.....St. Paul

Ramsey County Medical Society

Regular meetings, last Monday of each month except June, July, and August

Annual meeting in January

PRESIDENT

Christison, J. T.....St. Paul

SECRETARY

Smith, C. E. Jr.....St. Paul

Abbott, J. S.....St. Paul
Abramovich, J. H.....St. Paul
Ahrens, A. E.....St. Paul
Ahrens, A. H.....St. Paul
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Alexander, F. H.....St. Paul
Allen, Mason.....St. Paul
Ancker, A. B.....St. Paul
Araouni, Khalil.....St. Paul
Arends, A. L.....St. Paul
Armstrong, J. M.....St. Paul
Arzt, C. P.....St. Paul
Bacon, Knox.....St. Paul
Bacon, L. C.....St. Paul
Balcome, F. E.....St. Paul
Ball, C. R.....St. Paul
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Barron, Moses.....Minneapolis
Barsness, Nellie.....St. Paul
Beadie, W. D.....St. Paul
Beaudoux, H. A.....St. Paul
Beckley, F. L.....St. Paul
Benepe, L. M.....St. Paul
Bennion, P. H.....St. Paul
Berrisford, P. D.....St. Paul
Bettingen, J. W.....St. Paul
Binger, H. E.....St. Paul
Birnberg, T. L.....St. Paul
Bock, R. A.....St. Paul
Boeckmann, Eduard.....St. Paul
Boeckmann, Egil.....St. Paul
Pohland, E. H.....St. Paul
Bole, R. S.....St. Paul
Boleyn, E. S.....Stillwater
Bolstad, H. C.....St. Paul
Bosworth, Robinson.....St. Paul
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Brown, LeRoy.....St. Paul
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Davis, William.....St. Paul
Dedolph, Karl.....St. Paul
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Denny, C. F.....St. Paul
Dewar, John Evan.....Minneapolis
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Dohm, C. L.....St. Paul
Drake, C. B.....St. Paul
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Earl, R. O.....St. Paul
Engberg, Edw. John.....St. Paul
Ernest, Geo. C.....St. Paul
Eshelby, E. C.....St. PaulFerguson, J. C.....St. Paul
Flagg, S. D.....St. Paul
Fogarty, Chas. W.....St. Paul
Foster, Burnside.....St. Paul
Francis, S. O.....White Bear
Freeman, Charles D.....St. Paul
Furber, W. W.....Cottage Grove
Gauger, E. C.....St. Paul
Geist, Geo. A.....St. Paul
Ghent, C. H.....St. Paul
Ghent, M. M.....St. Paul
Gilfillan, J. S.....St. Paul
Gillette, A. J.....St. Paul
Goltz, E. V.....St. Paul
Gotham, C. L.....St. Paul
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Gravelle, J. M. A.....St. Paul
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Hammes, E. M.....St. Paul
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Hilger, D. D.....St. Paul
Hilger, L. A.....St. Paul
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Hoff, Peder A.....St. Paul
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 Schatz, F. J. Rosemount
 Schnacke, R. A. St. Paul

Schoch, R. B. J. St. Paul
 Schons, Edw. St. Paul
 Schultdt, F. C. St. Paul
 Schwyzer, Arnold. St. Paul
 Senkler, Geo. E. St. Paul
 Shimonek, Anton. St. Paul
 Simon, Geo. H. St. Paul
 Skinner, H. O. St. Paul
 Sneve, Haldor. St. Paul
 Snyder, G. W. Belle Plaine
 Sohlberg, O. St. Paul
 Sohlberg, Olof I., Jr. St. Paul
 Sorose, Bernard. St. Paul
 Staley, John C. St. Paul
 Steen, A. H. Cottage Grove
 Sterner, E. G. St. Paul
 Stevens, F. A. Lake Elmo
 Stierle, A., Jr. St. Paul
 Stolpestad, H. L. St. Paul
 Sweeney, Arthur. St. Paul
 Taylor, H. L. St. Paul
 Teisberg, C. B. St. Paul
 Turnacliff, D. D. St. Paul
 Van Slyke, Charles A. St. Paul
 Vercellini, G. St. Paul
 Warner, E. F. St. Paul
 Warren, Edmund L. St. Paul
 Whitacre, J. C. St. Paul
 Whitcomb, E. H. St. Paul
 White, J. S. St. Paul
 Whitney, A. W. St. Paul
 Williams, C. St. Paul
 Winnick, J. B. St. Paul
 Wold, K. C. St. Paul
 Zander, C. H. St. Paul
 Zaun, J. J. St. Paul
 Zimmermann, H. B. St. Paul

Chisago-Pine County Medical Society

Regular meetings, second Tuesday in January and July

Annual meeting in January

PRESIDENT
 Murdock, H. G. Taylor's Falls
 SECRETARY
 Anderson, C. A. Rush City
 Dredge, H. P. Sandstone

Ehmke, W. C. Willow River
 Gray, C. E. Rush City
 Gunz, A. N. Centre City
 Kelsey, C. G. Hinckley
 Lagerstrom, F. G. Lindstrom
 Mattson, J. A. Chisago City

Poirier, J. A. Forest Lake
 Stowe, A. J. Rush City
 Tilton, A. J. Danube
 Werner, O. S. Lindstrom
 Wiseman, R. L. Pine City
 Zeien, Thos. North Branch

Central Minnesota District Medical Society

Mille Lacs, Isanti, Sherburne, and Kanabec Counties

Regular meetings, January, April, July, and October

Annual meeting in July

PRESIDENT
 Bacon, H. P. Milaca
 SECRETARY
 Parsons, George E. Elk River

Cooney, H. C. Princeton
 Frasier, Geo. W. Hill City
 Kvitrud, Gilbert. Grasston

Olsen, S. H. Milaca
 Roadman, Ira M. Onamia
 Swenson, Charles. Braham
 Vrooman, F. E. St. Francis

Carlton County Medical Society

Regular meetings, first Monday of each month

Annual meeting December twenty-ninth

PRESIDENT
 Fleming, James. Cloquet
 SECRETARY
 Raiter, Franklin. Cloquet

Barclay, A. Cloquet
 Brunet, M. L. Cloquet
 Havens, J. G. W. Cloquet
 Miller, Henrietta P. Cloquet

Shannon, Sylvester. Barnum
 Walters, Franklin R. Moose Lake
 Watkins, S. O. Carlton

St. Louis County Medical Society

St. Louis, Cook, Lake, and Itasca Counties

Regular meetings, second Thursday of each month

Annual meeting in October

PRESIDENT
 Grawn, F. A. Duluth
 SECRETARY
 Schroder, Charles H. Duluth
 Abbott, Wm. P. Duluth
 Adams, B. S. Hibbing
 Andres, John H. Duluth
 Arminen, K. V. Duluth
 Ayers, Geo. T. Ely
 Barney, Leon A. Duluth
 Bergquist, K. E. Duluth
 Blacklock, S. S. Hibbing
 Boyer, S. H. Duluth
 Braden, A. J. Duluth

Bray, C. W. Biwabik
 Brooks, G. F. Hibbing
 Bullen, F. W. Hibbing
 Burns, R. L. Two Harbors
 Caldwell, J. P. Marble
 Carstens, C. F. Hibbing
 Chapman, T. L. Duluth
 Cheney, E. L. Duluth
 Christensen, E. P. Two Harbors
 Clark, C. H. Duluth
 Clark, F. F. Duluth
 Collins, Arthur N. Duluth
 Collins, Homer C. Duluth
 Conkey, C. D. Duluth
 Coventry, W. A. Duluth
 Crowe, J. H. Virginia

Davis, Horace S. Duluth
 Davis, Irwin Grant. Duluth
 Deslauriers, A. A. Duluth
 Drenning, F. C. Duluth
 Eisenman, W. G. Chisholm
 Ekblad, J. W. Duluth
 Eklund, J. J. Duluth
 Eklund, Wm. J. Duluth
 Fahey, E. W. Duluth
 Forbes, R. S. Duluth
 Gillespie, N. H. Duluth
 Giroux, A. A. Duluth
 Graham, David. Duluth
 Graham, R. Duluth
 Graham, R. D. Duluth
 Greeley, L. Q. Duluth

Grover, F. C.....Duluth
 Haney, C. L.....Duluth
 Heimark, O. E.....Duluth
 Hirschboech, F. J.....Buhl
 Hirschfield, M. S.....Duluth
 Hursh, M. M.....Grand Rapids
 Jensen, T. J.....Duluth
 Johnson, S. M.....Buhl
 Keyes, C. R.....Duluth
 Kiesling, I. H.....Hibbing
 Kirk, A. B.....Chisholm
 Klein, Harry.....Duluth
 Knauff, M. K.....Two Harbors
 Kraft, Peter.....Duluth
 Kurz, John.....Cook
 Kuth, Jos. R.....Duluth
 Laird, A. T.....Nopeming
 Lenont, C. B.....Virginia
 Lepak, Francis J.....Duluth
 Linneemann, N. L.....Duluth
 Lum, C. E.....Duluth
 Lynam, Frank.....Duluth
 McComb, C. F.....Duluth

McCoy, Mary K.....Duluth
 McCuen, J. A.....Duluth
 McDonald, A. L.....Duluth
 McGiffert, E. N.....Duluth
 McIntyre, E. H.....Virginia
 Magie, W. H.....Duluth
 Malmgren, C. V.....Virginia
 Manley, J. R.....Duluth
 Martin, T. R.....Duluth
 Metcalf, F. W.....Winton
 Michelson, H. E.....Virginia
 More, C. W.....Eveleth
 Morss, C. R.....Zumbrota
 Murphy, I. J.....St. Paul
 Murray, D. D.....Duluth
 Nelson, E. H.....Chisholm
 Nicholson, M. A.....Duluth
 Oredson, O. A.....Duluth
 Pare, L. T.....Duluth
 Parker, Owen W.....Ely
 Parsons, F. L.....Mountain Iron
 Payette, C. H.....Duluth
 Pesonen, A. A.....Virginia
 Prudden, C. E.....Duluth

Robinson, J. M.....Duluth
 Rood, D. C.....Hibbing
 Rowe, O. W.....Duluth
 Schulze, Albert G.....Duluth
 Schwartz, A. H.....Duluth
 Salter, W. H.....Duluth
 Seashore, D. E.....Duluth
 Shapiro, E. Z.....Duluth
 Spicer, F. W.....Duluth
 Sukeforth, L. A.....Duluth
 Sutherland, H. N.....Ely
 Taylor, A. C.....Duluth
 Taylor, C. W.....Duluth
 Tilderquist, D. L.....Duluth
 Tufty, J. M. O.....Duluth
 Tuohy, E. L.....Duluth
 Turnbull, F. M.....Duluth
 Vercellini, C. E.....Duluth
 Walker, A. E.....Duluth
 Webster, H. E.....Duluth
 Weirick, H. R.....Hibbing
 Wilkinson, Stella.....Duluth
 Winter, John A.....Duluth

FOURTH DISTRICT

COUNCILOR, R. J. HILL.....Minneapolis

Hennepin County Medical Society

Regular meetings, first Monday in each month

Annual meeting in January

PRESIDENT

Hamilton, A. S.....Minneapolis

SECRETARY

Maxeiner, Stanley R.....Minneapolis

Abbott, A. W.....Minneapolis
 Adair, F. L.....Minneapolis
 Aldrich, Flora C.....Anoka
 Allen, H. W.....Minneapolis
 Andersen, Arnt G.....Minneapolis
 Anderson, A. E.....Minneapolis
 Anderson, J. D.....Minneapolis
 Arey, H. C.....Excelsior
 Aune, Martin.....Minneapolis
 Aurand, W. H.....Minneapolis
 Aurness, P. A.....Minneapolis
 Austin, Edward E.....Minneapolis
 Avery, J. Fowler.....Minneapolis
 Aylmer, A. L.....Minneapolis
 Baler, Florence C.....Minneapolis
 Baker, A. T.....Minneapolis
 Baker, E. L.....Minneapolis
 Baker, Looe.....Minneapolis
 Bakke, O. H.....Minneapolis
 Barber, J. P.....Minneapolis
 Bass, G. W.....Minneapolis
 Baxter, D. E.....New York City
 Baxter, S. H.....Minneapolis
 Bell, J. W.....Minneapolis
 Benedict, E. E.....Minneapolis
 Benjamin, A. E.....Minneapolis
 Benn, F. G.....Minneapolis
 Benson, G. E.....Minneapolis
 Besesen, A. N.....Minneapolis
 Bishop, Chas. W.....Minneapolis
 Bissell, Frank S.....Minneapolis
 Blake, James.....Hopkins
 Blomburgh, A. F.....Minneapolis
 Bockman, M.....Minneapolis
 Booth, A. E.....Minneapolis
 Boreen, Clifton A.....Minneapolis
 Bouman, H. A.....Minneapolis
 Bracken, H. M.....Minneapolis
 Brooks, Charles N.....Minneapolis
 Brown, E. D.....Minneapolis
 Brown, E. J.....Minneapolis
 Brown, Paul F.....Minneapolis
 Brown, R. S.....Minneapolis
 Bryant, Oliver.....Minneapolis
 Burfield, G. H.....Afton
 Butler, John.....Minneapolis
 Byrnes, W. J.....Minneapolis
 Camp, W. E.....Minneapolis
 Campbell, L. M.....Minneapolis
 Campbell, R. A.....Minneapolis
 Carlaw, C. M.....Minneapolis
 Cary, H. E.....Minneapolis
 Cavanor, P. T.....Minneapolis
 Chowning, W. M.....Minneapolis
 Cirkler, A. A.....Minneapolis
 Clark, H. S.....Minneapolis
 Cohen, H. A.....Minneapolis

Condit, W. H.....Minneapolis
 Cook, H. W.....Minneapolis
 Corbett, J. F.....Minneapolis
 Cosman, E. O.....Minneapolis
 Cowles, D. C.....Minneapolis
 Crafts, L. M.....Minneapolis
 Crammer, R. R.....Minneapolis
 Crosby, J. A.....Minneapolis
 Cross, J. G.....Minneapolis
 Crume, Geo. P.....Minneapolis
 Deziel, G.....Minneapolis
 Disen, C. E.....Minneapolis
 Donaldson, C. A.....Minneapolis
 Doxey, G. L.....Minneapolis
 Drake, C. R.....Minneapolis
 Dreisbach, N.....Minneapolis
 Dunsmoor, F. A.....Minneapolis
 Dutton, C. E.....Minneapolis
 Egan, John M.....Minneapolis
 Eggen, O. K.....Minneapolis
 Eitel, Geo. G.....Minneapolis
 Engstad, J. E.....Minneapolis
 Erdmann, Chas. A.....Minneapolis
 Ericson, J. G.....Minneapolis
 Farr, R. E.....Minneapolis
 Feidt, W. W.....Minneapolis
 Fifield, Emily W.....Minneapolis
 Fjelstad, Carl A.....Minneapolis
 Fleming, A. S.....Minneapolis
 Fox, J. M.....Minneapolis
 Franzen, H. G.....Minneapolis
 Gardner, E. L.....Minneapolis
 Geist, Emil S.....Minneapolis
 George, J. W.....Minneapolis
 Giessler, Paul W.....Minneapolis
 Gordon, G. J.....Minneapolis
 Green, E. K.....Minneapolis
 Groll, S.....Minneapolis
 Gullford, H. M.....Minneapolis
 Gunderson, H. J.....Minneapolis
 Hacking, F. H.....Minneapolis
 Hagen, G. L.....Minneapolis
 Haggard, G. D.....Minneapolis
 Hall, J. M.....Minneapolis
 Hall, Pearl M.....Minneapolis
 Hall, W. A.....Minneapolis
 Hollowell, W. H.....Minneapolis
 Hansen, Olga S.....Minneapolis
 Hare, E. R.....Minneapolis
 Harrah, J. W.....Minneapolis
 Harrington, C. D.....Minneapolis
 Hartzell, Thos. B.....Minneapolis
 Haverfield, Addie R.....Minneapolis
 Haynes, F. E.....Minneapolis
 Haywood, Geo. M.....Minneapolis
 Head, Geo. D.....Minneapolis
 Hedback, A. E.....Minneapolis
 Helk, H. H.....Minneapolis
 Hendrickson, J. F.....Minneapolis
 Henry, C. E.....Minneapolis
 Hiebert, J. P.....Minneapolis
 Higbee, Paul A.....Minneapolis
 Higgins, J. H.....Minneapolis

Hill, Eleanor J.....Minneapolis
 Hill, R. J.....Minneapolis
 Hirschfield, Adolph.....Minneapolis
 Hobbs, C. A.....Minneapolis
 Hodge, S. V.....Minneapolis
 Hcegh, Knut.....Minneapolis
 Horning, D. W.....Minneapolis
 Huenekens, E. J.....Minneapolis
 Hvoslef, Jakob.....Minneapolis
 Hynes, James.....Minneapolis
 Hynes, J. E.....Minneapolis
 Iden, B. F.....Minneapolis
 Ikeda, Kano.....Minneapolis
 Irvine, H. G.....Minneapolis
 Irwin, A. F.....Cleveland, Ohio
 Jensen, M. J.....Minneapolis
 Johnson, A. E.....Minneapolis
 Johnson, James A.....Minneapolis
 Johnson, Julius.....Minneapolis
 Johnson, Nimrod A.....Minneapolis
 Johnson, R. A.....Minneapolis
 Jones, Herbert W.....Minneapolis
 Jones, R. N.....Minneapolis
 Jones, W. A.....Minneapolis
 Josewich, Alex.....Minneapolis
 Kavanagh, K. S.....Minneapolis
 Kelly, E. S.....Minneapolis
 Kennedy, C. C.....Minneapolis
 Kennedy, Jane F.....Minneapolis
 Kennedy, R. R.....Minneapolis
 Kerrick, Stanley E.....Minneapolis
 Kimball, H. H.....Minneapolis
 King, E. A.....Minneapolis
 Kirmse, Geo. W.....Minneapolis
 Kistler, C. M.....Minneapolis
 Kistler, J. M.....Minneapolis
 Knight, H. L.....Minneapolis
 Knight, R. R.....Minneapolis
 Knight, Ralph T.....Minneapolis
 Kohler, Geo. A.....Minneapolis
 Koller, L. R.....Minneapolis
 Kremer, W. J.....Minneapolis
 Kriedt, Danl.....Minneapolis
 Lajoie, J. M.....Minneapolis
 Lapiere, C. A.....Minneapolis
 Laurent, A. A.....Minneapolis
 La Vake, R. T.....Minneapolis
 Law, A. A.....Minneapolis
 Laws, C. H.....Ann Arbor, Mich.
 Leavitt, H. H.....Minneapolis
 Lee, John W.....Minneapolis
 Lee, Thos. G.....Minneapolis
 Leland, M. N.....Minneapolis
 Lewis, J. D.....Minneapolis
 Lind, C. J.....Minneapolis
 Linner, H. P.....Minneapolis
 Litchfield, J. T.....Minneapolis
 Little, J. W.....Minneapolis
 Litzenberg, J. C.....Minneapolis
 Loberg, A. E.....Minneapolis
 Long, Jesse.....Minneapolis
 Lundgren, A. C.....Minneapolis
 Lynch, M. J.....Minneapolis

Lysne, Henry.....Minneapolis
 MacDonald, D. A.....Minneapolis
 MacDonald, I. C.....Minneapolis
 McCollom, C. A.....Minneapolis
 McCusker, C. F.....Minneapolis
 McDermott, T. E.....Minneapolis
 McDonald, H. N.....Minneapolis
 McEchran, A.....Minneapolis
 McIntyre, Geo.....Minneapolis
 McLaughlin, J. A.....Minneapolis
 Macnie, J. S.....Minneapolis
 Maland, C. O.....Minneapolis
 Mann, A. T.....Minneapolis
 Marcle, W. J.....Minneapolis
 Mark, D. B.....Minneapolis
 Matchan, Glen R.....Minneapolis
 May, W. H.....Minneapolis
 Mead, Marion A.....Minneapolis
 Meyer, E. L.....Minneapolis
 Miller, Hugo H.....Harvey, N. D.
 Moersch, Fred P.....Minneapolis
 Moir, Wm. V.....Minneapolis
 Moore, J. E.....Minneapolis
 Moorehead, Martha B.....Minneapolis
 Moren, E.....Minneapolis
 Morrison, A. W.....Minneapolis
 Morse, John H.....Minneapolis
 Morton, H. Mc.....Minneapolis
 Murdock, A. J.....Minneapolis
 Murray, Wm. R.....Minneapolis
 Nelson, C. P.....Minneapolis
 Nelson, H. S.....Minneapolis
 Newhart, Horace.....Minneapolis
 Newklrk, H. D.....Minneapolis
 Nippert, L. A.....Minneapolis
 Nissen, Henrlk.....Minneapolis
 Noonan, D. F.....Minneapolis
 Nootnagel, C. F.....Minneapolis
 Nordland, Martin.....Robbinsdale
 Norred, C. H.....Minneapolis
 Oberg, C. M.....Minneapolis
 Oberg, E.....Minneapolis
 Olson, F. A.....Minneapolis
 Olson, G. M.....Minneapolis
 Olson, O. A.....Minneapolis
 Oppegaard, M. O.....Minneapolis
 Orton, H. N.....Minneapolis
 Owre, Oscar.....Minneapolis
 Parker, E. H.....Minneapolis
 Parks, Albert H.....Minneapolis
 Paulson, E. L.....Minneapolis
 Pederson, R. M.....Minneapolis
 Perry, Ralph St. J.....Minneapolis
 Peters, R. M.....Minneapolis
 Petersen, J. R.....Minneapolis

Pettit, C. W.....Minneapolis
 Pineo, W. B.....Minneapolis
 Plehn, J. F.....Minneapolis
 Plonske, C. J.....Minneapolis
 Poehler, F. T.....Minneapolis
 Poppe, Fred H.....Minneapolis
 Pratt, F. J.....Minneapolis
 Preine, I. A.....Minneapolis
 Prim, J. A.....Minneapolis
 Quinby, Thos. F.....Minneapolis
 Quist, Henry W.....Minneapolis
 Rees, S. P.....Minneapolis
 Rexford, L. A.....Minneapolis
 Reynolds, J. S.....Minneapolis
 Riley, Wm. H.....Minneapolis
 Ringnell, C. J.....Minneapolis
 Rishmiller, J. H.....Minneapolis
 Rizer, R. I.....Minneapolis
 Roan, Carl M.....Minneapolis
 Roberts, Thos. S.....Minneapolis
 Roberts, W. B.....Minneapolis
 Robertson, H. E.....Minneapolis
 Robitshek, E. C.....Minneapolis
 Rochford, W. E.....Minneapolis
 Rodda, F. C.....Minneapolis
 Rodgers, C. L.....Minneapolis
 Rosen, Samuel.....Minneapolis
 Rosenwald, J. P.....Minneapolis
 Rutledge, J. W.....Minneapolis
 Sanford, J. A.....Farmington
 Scheffek, J. F.....Minneapolis
 Scheldrup, N. H.....Minneapolis
 Schlutz, F. W.....Minneapolis
 Schmidt, Karl H.....Minneapolis
 Schmitt, S. C.....Minneapolis
 Schneider, J. P.....Minneapolis
 Schulze, Geo.....Minneapolis
 Schwyzer, G.....Minneapolis
 Seashore, Gilbert.....Minneapolis
 Sedgwick, J. P.....Minneapolis
 Seham, M.....Minneapolis
 Sessions, J. C.....Minneapolis
 Simons, Jamar.....Minneapolis
 Simpson, J. D.....Minneapolis
 Silvertsen, Ivar.....Minneapolis
 Slocumb, Maude S.....Minneapolis
 Smith, A. E.....Minneapolis
 Smith, D. Edmund.....Minneapolis
 Smith, Norman M.....Minneapolis
 Soderlund, A.....Minneapolis
 Souba, F. J.....Minneapolis
 Scratt, C. N.....Minneapolis
 Stanley, C. R.....Minneapolis
 Staples, H. L.....Minneapolis
 Stone, Harold.....Wayzata

Strachauer, Arthur C.....Minneapolis
 Stout, E. S.....Minneapolis
 Stuart, J. H.....Minneapolis
 Sweetser, H. B.....Minneapolis
 Sweitzer, S. E.....Minneapolis
 Taft, J. O.....Minneapolis
 Taft, Walter L.....Minneapolis
 Talbot, Ada E.....Minneapolis
 Tanner, A. C.....St. Louis Park
 Taylor, Rood.....Minneapolis
 Tennyson, Theodore.....Minneapolis
 Thomas, David O.....Minneapolis
 Thomas, G. E.....Minneapolis
 Thomas, Geo. H.....Minneapolis
 Thomas, Gilbert J.....Minneapolis
 Thompson, H. H.....Minneapolis
 Tingdale, A. C.....Minneapolis
 Todd, F. C.....Minneapolis
 Towers, F. E.....Minneapolis
 Tyrrell, C. C.....Minneapolis
 Ulrich, Henry L.....Minneapolis
 Ulrich, Mabel S.....Minneapolis
 Van Deboget, Lewis.....Minneapolis
 Voyer, Emile O.....Minneapolis
 Vanous, E. Z.....Minneapolis
 Warham, Thos. T.....Minneapolis
 Warwick, Margaret.....Minneapolis
 Watson, C. W.....Minneapolis
 Watson, J. A.....Minneapolis
 Westbrook, F. F. Vaucover, B. C.
 Weston, C. G.....Minneapolis
 Wethall, A. G.....Minneapolis
 Wheat, F. C.....Minneapolis
 Whetstone, Mary S.....Minneapolis
 Whipple, C. D.....Minneapolis
 White, S. Marx.....Minneapolis
 Wilcox, Archa E.....Minneapolis
 Wilcox, M. Russell.....Minneapolis
 Wilcox, Van H.....Minneapolis
 Williams, Robert.....Minneapolis
 Williams, U. G.....Minneapolis
 Willson, Hugh S.....Minneapolis
 Wippermann, Paul W.....Minneapolis
 Witham, C. A.....Minneapolis
 Wittich, F. W.....Minneapolis
 Woltmann, H. W.....Minneapolis
 Wood, Douglas F.....Minneapolis
 Woodward, F. R.....Minneapolis
 Woodward, F. O.....Minneapolis
 Wright, C. B.....Minneapolis
 Wright, C. D.....Minneapolis
 Wright, F. R.....Minneapolis
 Yoerg, O. W.....Minneapolis
 Ziskin, Thos.....Minneapolis

Meeker County Medical Society

Regular meetings, every three months at call of Secretary

Annual meeting in December

PRESIDENT
 Robertson, Archibald W.....Litchfield
SECRETARY
 Danelson, Karl A.....Litchfield

Brigham, F. T.....Watkins
 Chapman, W. E.....Litchfield
 Cutts, G. A. C.....Grove City

Donovan, J. J.....Litchfield
 Peterson, A. C.....Dassel
 Peterson, George E.....Dassel
 Robertson, W. P.....Litchfield

Wright County Medical Society

Regular meetings, first Monday in January, April, July, and October

Annual meeting, first Monday in October

PRESIDENT
 Wooster, A. M.....Rockford
SECRETARY
 Catlin, John J.....Buffalo

Ellison, Frank E.....Monticello
 Harriman, L.....Howard Lake
 Hawkins, E. P.....Montrose
 Metcalf, J. N.....Monticello
 O'Neill, J. W.....Albertville

Ridgway, A. M.....Annandale
 Rousseau, Victor.....Maple Lake
 Sherman, H. T.....Monticello
 Shrader, E. E.....Watertown
 Warner, E. A.....Moline, Ill.
 Weum, T. W.....South Haven

Stearns-Benton County Medical Society

Regular meetings, last Thursday in January, April, July, and October

Annual meeting in April

PRESIDENT
 Friesleben, William.....Sauk Rapids
SECRETARY
 Boehm, J. C.....St. Cloud
 Beaty, J. H.....St. Cloud
 Beebe, W. L.....St. Cloud
 Brigham, Charles F.....St. Cloud
 Campbell, Claude M.....Pricelyn
 DuBois, Julian A.....Sauk Center
 DuBois, Julian F.....Sauk Center
 Dunn, John B.....St. Cloud
 Edmunds, I. J.....Clearwater
 Freeman, W. L.....Foley

Frisch, Frank P.....Kimball
 Gaag, Edward W.....Havre, Mont.
 Gelz, John J.....Richmond
 Glycer, R. T.....Broton
 Goehrs, H. W.....Melrose
 Green, E. F.....St. Cloud
 Gulde, W. C.....Minneapolis
 Hilbert, Pierre A.....Melrose
 Holdridge, Geo. A.....Foley
 Hovorka, T. W.....Albany
 Kuhlmann, August.....Melrose
 Lamb, Harold L.....Sauk Center
 Lewis, C. B.....St. Cloud
 Lewis, Edwin J.....Sauk Center
 May, C. E.....Minneapolis
 McDowell, J. P.....Sauk Rapids

Moynihan, A. F.....Sauk Center
 Pilon, Pierre C.....Paynesville
 Pilon, Pierre C.....St. Joseph
 Putney, George E.....Paynesville
 Rathbun, A. M.....Rice
 Rice, Geo. D.....St. Cloud
 Ridgway, Alex.....Belgrade
 Sherwood, Geo. E.....Kimball
 Slocumb, H. H.....Belgrade
 Stangl, P. E.....St. Cloud
 Sutton, C. S.....St. Cloud
 Sutton, H. E.....Cold Spring
 Watson, Tolbert.....Albany
 Whiting, A. D.....St. Cloud
 Wolner, O. H.....Gilbert

Kandiyohi-Swift County Medical Society

Regular meetings, first Thursday in March, June, September, and December

Annual meeting the first Thursday in December

PRESIDENT

Branton, B. J.....Willmar

SECRETARY

Jacobs, J. C.....Willmar

Benson, I. S.....Willmar
 Canfield, H. E.....Willmar
 Daignault, Oscar.....Benson
 Davison, P. C.....Willmar
 Frost, E. H.....Willmar
 Hansen, Henry V.....New London
 Johnson, Christian.....Willmar

Johnson, Hans.....Kerkhoven
 Johnston, E. B.....Benson
 Little, De Willis.....Appleton
 McMahon, D. J.....Raymond
 Rains, John M.....Willmar
 Scofield, C. L.....Benson
 Shelper, H. J.....Appleton

FIFTH DISTRICT

COUNCILOR, C. E. PERSONS.....Marshall

Camp Release District Medical Society

Regular meetings, last Thursday of each quarter

Annual meeting, November 30

PRESIDENT

Marken, M. H.....Boyd

SECRETARY

Kerns, H.Granite Falls

Adams, R. C.....Bird Island
 Aldrich, F. H.....Belview
 Bacon, R. S.....Montevideo
 Benoit, F. T.....Madison
 Berg, S. A.....Granite Falls
 Bergh, L. N.....Montevideo
 Burns, M. A.....Milan
 Burns, F. W.....Montevideo
 Clay, E. M.....Renville
 Cole, H. B.....Franklin
 Crandall, A. M.....Fairfax
 Duclos, J. A.....Henderson
 Duncan, H.Marietta

Eisengraeber, G. A.....Granite Falls
 Ferguson, James B.....St. Paul
 Flinn, Thos. E.....Redwood Falls
 Flower, Ward Z.....Gibbon
 Gaines, E. C.....Buffalo Lake
 Gammell, H. W.....Madison
 Hammerstrand, F. L.....
Sacred Heart
 Hanson, H. H.....Greenbush
 Hauge, M. M.....Clarkfield
 Holmberg, L. J.....Canby
 Johnson, C. M.....Dawson
 Johnson, H. M.....Dawson
 Johnson, O. F.....Winthrop
 Jones, D. N.....Minneapolis
 Kanne, C. W.....Arlington
 Kilbride, J. S.....Canby
 Lee, W. N.....Madison

Lima, L.Montevideo
 Maercklein, I. R.....Renville
 Mee, P. H.....Osseo
 Meland, O. N.....Detroit
 Mesker, G. H.....Olivia
 Moore, W. J.....Wood Lake
 Nelson, N. A.....Dawson
 Passer, A. A.....Olivia
 Pease, G. R.....Redwood Falls
 Peterson, T.....Minneapolis
 Penhall, F. W.....Morton
 Puffer, F. L.....Bird Island
 Smith, L. G.....Montevideo
 Stemsrud, A. A.....Dawson
 Strout, G. E.....Minneapolis
 Walker, G. H.....Fairfax
 Westby, Nels.....Madison
 Whittier, R. W.....Morton
 Zimbeck, R. D.....Maynard

Brown-Redwood County Medical Society

Annual meeting in May

PRESIDENT

Jamieson, Earl ...Walnut Grove

SECRETARY

Reineke, G. F.....New Ulm

Adams, J. L.....Morgan
 Brand, W. A.....Redwood Falls
 Eckstein, A. W.....Comfrey
 Fritsche, L. A.....New Ulm

Gleysteen, D. V.....Lamberton
 Gray, F. D.....Marshall
 Hammermeister, T. F.....New Ulm
 Kiefer, M. A.....Sleepy Eye
 Kusske, A. L.....Hutchinson
 Melerding, W. A.....Springfield
 Peterson, R. A.....Vesta
 Piper, M. C.....Sanborn
 Ravn, Bjarne.....Milroy
 Rothenburg, J. C.....Springfield

Schoch, J. L.....New Ulm
 Seifert, O. J.....New Ulm
 Shrader, J. S.....Springfield
 Strickler, A. F.....Sleepy Eye
 Strickler, O. C.....New Ulm
 Sundt, MathiasHanska
 Vogel, J. H.....New Ulm
 Walker, C. C.....Lamberton
 Weiser, G. B.....New Ulm
 Wellcome, J. W. B.....Sleepy Eye

Lyon-Lincoln County Medical Society

Regular meetings, first Tuesday in February, May, July, and October

Annual meeting in February

PRESIDENT

Persons, C. E.....Marshall

SECRETARY

Workman, H. M.....Tracy

Bacon, C. G.....Marshall

Bossingham, O. N.....Lake Benton
 Germs, Chas.....Balaton
 Hoidale, A. D.....Tracy
 Jacquot, G. L.....Ivanhoe
 Jensen, J. C.....Hendricks
 Paulson, Theo. S.....Tyler
 Robertson, J. B.....Cottonwood

Sanderson, Ed. T.....Minneota
 Tharaldsen, Thorfinn.....Cottonwood
 Thordarson, Th.....Minneota
 Vadheim, Alfred L.....Tyler
 Wakefield, Wm.....Lake Benton
 Workman, W. G.....Tracy

SIXTH DISTRICT

COUNCILOR, F. R. WEISER.....Windom

Southwestern Medical Society

Pipestone, Rock, Nobles, Murray, and Cottonwood Counties

Regular meetings, second Thursday in May and November

Annual meeting in November

PRESIDENT

Wiedow, Henry.....Worthington

SECRETARY

King, EmilFulda
 Arnold, E. W.....Bigelow
 Balcom, G. G.....Lake Wilson
 Bong, J. H.....Jasper
 Brown, A. H.....Pipestone
 Cress, P. J.....Ellsworth
 De Boer, Hermanus.....Edgerton
 Dolan, C. P.....Worthington
 Doms, H. C.....Slayton
 Dudley, J. H.....Windom

Eaton, W. H.....Worthington
 Engstrom, F. A.....Hills
 Hilger, J. M.....Iona
 Howard, S. E.....Slayton
 Leebens, John H.....Lismore
 Lowe, Thomas.....Pipestone
 McCrea, James.....Fulda
 McKeown, E. G.....Edgerton
 Manson, F. M.....Worthington
 May, C. C.....Adrian
 Miller, Victor L.....Mankato
 Mork, B. O.....Worthington
 Patterson, W. E.....Currie
 Piper, Wm. A.....Mountain Lake
 Richardson, W. E.....Slayton

Richmond, Chas. D.....Jeffers
 Schmidt, Geo. F.....Pipestone
 Schmidt, H. A.....Westbrook
 Sherman, C. L.....Luverne
 Smallwood, J. T.....Worthington
 Sogge, L.Windom
 Spalding, A. E.....Luverne
 Taylor, Wm. J.....Pipestone
 Thorson, E. O.....Luverne
 Tofte, Josephine B.....Pine City
 Waller, Jos. D.....Wilmont
 Watson, F. G.....Rushmore
 Weiser, F. R.....Windom
 Williams, Leon A.....Slayton
 Wright, C. O.....Luverne

Blue Earth Valley Medical Society

Faribault and Martin Counties

Regular meetings, last Thursday in May and October

Annual meeting last Thursday in October

PRESIDENT
Urstad, O. H. Kiester

SECRETARY
Broberg, J. A. Blue Earth

Bailey, H. B. Ceylon
Barr, W. H. Wells
Blong, P. H. Elmore

Burton, C. N. Blue Earth
Butz, J. A. Monterey
Chambers, W. C. Blue Earth
Dewey, G. W. Fairmont
Durgin, F. L. Winnebago
Farrish, R. C. Sherburn
Gaugh, W. H. Granada
Gullixson, Andrew. Bricelyn
Holm, P. F. Wells
Hunt, F. N. Fairmont

Hunt, R. C. Fairmont
Hunte, A. F. Truman
Johnson, H. P. Fairmont
Luedtke, G. H. Fairmont
McGroarty, J. J. Easton
Mikkelsen, M. Wells
Richardson, W. J. Fairmont
Stewart, O. E. Bricelyn
Strobel, W. G. Welcome
Wilson, C. E. Blue Earth

Jackson County Medical Society

Regular meetings, first Tuesday in May and November

Annual meeting in November

PRESIDENT
Portmann, U. V. Jackson

SECRETARY
Moe, Anton J. Heron Lake

Allen, R. W. Heron Lake
Arzt, Herbert L. Jackson
Biorn, N. A. Jackson
Chadbourn, A. G. Heron Lake
Hitchings, W. S. Lakefield

Leigh, H. J. Lakefield
Maitland, David P. Jackson
Nusbaum, D. H. Jackson
Portmann, Wm. C. Jackson
Rose, J. T. Lakefield
Rowe, Arthur N. Heron Lake

Watonwan County Medical Society

Regular meetings as called

Annual meeting, second Wednesday in December

PRESIDENT
Hagen, O. E. Butterfield

SECRETARY
Haynes, B. H. St. James

Grimes, H. B. Madelia
Kabrick, O. A. Odin

McCarthy, W. J. Madelia
Rowe, W. H., Jr. St. James
Thompson, Albert. St. James

SEVENTH DISTRICT

COUNCILOR, F. A. DODGE. Le Sueur

Nicollet-Le Sueur County Medical Society

Regular meetings, September and January

Annual meeting in January

PRESIDENT
Blakely, C. C. St. Peter

SECRETARY
Le Clerc, Joseph E. Le Sueur

Aitkens, H. B. Le Sueur Center
Baskett, Geo. T. St. Peter

Baskett, Olive T. St. Peter
Covey, Herman W. St. Peter
Daniels, J. W. St. Peter
Dodge, F. A. Le Sueur
Eirley, Clara S. St. Peter
Freeman, Geo. H. Willmar
Ground, H. T. Virginia
Hartung, H. A. Le Sueur

McDougald, D. W. Le Sueur
McIntyre, G. W. St. Peter
Merritt, G. F. St. Peter
Olson, R. G. Nicollet
Phelps, R. M. St. Peter
Strathern, F. P. St. Peter
Valin, H. D. St. Peter
Woodworth, L. F. Le Sueur Center

McLeod County Medical Society

Regular meetings, January, April, July, and October

Annual meeting in January

PRESIDENT
Clement, J. B. Lester Prairie

SECRETARY
Maurer, E. L. Brownton

Axilrod, D. L. Hutchinson
Barrett, E. E. Glencoe
Bolles, D. W. Minneapolis
Sheppard, Fred. Hutchinson

Sheppard, P. E. Hutchinson
Tinker, C. W. Stewart
Wheeler, M. W. Glencoe

Scott-Carver County Medical Society

Regular meetings, first Thursday in March, June, September, and December

Annual meeting in December

PRESIDENT
Landenberger, John. New Prague

SECRETARY
Reiter, H. W. Shakopee

Buck, Fred H. Shakopee
Cannady, E. E. Prior Lake
Fischer, P. M. Shakopee
Henriksen, H. G. New Market
Kucera, W. J. New Prague

Moloney, G. R. Belle Plaine
Novak, E. E. New Prague
Schneider, H. A. Jordan
Soper, J. E. Norwood
Westerman, F. C. Montgomery

Goodhue County Medical Society

Regular meetings, January, April, July, and October

Annual meeting in January

PRESIDENT
McGuigan, H. T. Red Wing

SECRETARY
Fjelstad, C. A. Red Wing

Aanes, A. M. Clermont, Iowa
Anderson, J. V. Red Wing
Beyer, A. G. Red Wing
Claydon, L. E. Red Wing
Conley, A. A. Cannon, Falls
Conley, A. T. Cannon Falls
Cremer, M. H. Red Wing

Cremer, P. H. Hastings
Gates, C. E. Goodhue
Gates, J. A. Kenyon
Johnson, A. E. Red Wing
Jones, A. W. Red Wing
Sawyer, H. P. Goodhue
Smith, M. W. Red Wing

Rice County Medical Society

Regular meetings, first Wednesday in January, April, July, and October

Annual meeting in January**PRESIDENT**

Haessly, S. B. Faribault
Hanson, A. M. Faribault
Hunt, W. A. Northfield
Huxley, F. R. Faribault
Lane, Laura A. Faribault
Lee, W. P. Northfield
Lexa, F. J. Lonsdale
Mayland, M. L. Faribault

SECRETARY

Davis, F. U. Faribault
Babcock, F. M. Northfield
Finley, W. F. Lonsdale

Phillips, J. G. Northfield
Robilliard, Chas. M. Morristown
Robilliard, W. H. Faribault
Rumpf, W. H. Faribault
Seecley, I. F. Northfield
Smith, P. A. Faribault
Theissen, W. N. Faribault
Warren, F. S. Faribault
Wilson, W. Northfield

Wabasha County Medical Society

Regular meeting (annually) first Thursday after first Monday in July

PRESIDENT

Rankin, A. A. Zumbro Falls

SECRETARY

Wilson, W. F. Lake City

Adams, W. T. Elgin
Bayley, E. H. Lake City
Bieffuss, W. F. Elgin
Cochrane, W. J. Lake City
Dempsey, D. P. Kellogg

Fleischhauer, D. S. Wabasha
French, E. A. Plainview
Heagerty, W. B. Mazeppa
Nauth, W. W. Minneiska
Shaughnessy, M. J. Wabasha
Slocumb, J. A. Plainview

EIGHTH DISTRICT

COUNCILOR, HUGH F. MCGAUGHEY. Winona

Blue Earth County Medical Society

Regular meetings, last Monday of each month

Annual meeting in December**PRESIDENT**

Hielscher, J. A. Mankato

SECRETARY

Wentworth, A. J. Mankato

Andrews, J. W. Mankato
Andrews, Roy N. Mankato
Benham, E. W. Mankato
Curran, G. R. Mankato

Dahl, G. A. Mankato
Denman, A. V. Mankato
Field, Merton. St. Peter
Hielscher, Helen H. Mankato
Holbrook, J. S. Mankato
Holman, C. J. Mankato
James, J. H. Mankato
Kelly, T. C. Mankato
Kemp, A. F. Mankato
Liedloff, A. G. Mankato

Lloyd, H. J. Mankato
Luck, Hilda. Mankato
Osborn, Lida. Mankato
Pratt, C. C. Mankato
Schlesselman, J. T. Good Thunder
Schmitt, A. F. Mankato
Sohmer, A. E. J. Mankato
Williams, Hugh O. Lake Crystal
Wohlrabe, A. A. Mankato

Dodge County Medical Society

Regular meetings, first Wednesday in January, April, June, and October

Annual meeting in October**PRESIDENT**

Smith, F. D. Kasson

SECRETARY

Bigelow, Chas. E. Dodge Center

Adams, R. T. Mantorville
Baker, A. L. Kasson
Belt, W. E. Dodge Center

Clifford, F. F. West Concord
Harrison, E. E. West Concord
Way, O. F. Claremont

Freeborn County Medical Society

Regular meetings, monthly between the 20th and 30th

Annual meeting in May**PRESIDENT**

Von Berg, J. P. Albert Lea

SECRETARY

Stevenson, Robert G. Albert Lea

Bessesen, W. A. Albert Lea
Burns, H. D. Albert Lea
Butturff, C. R. Freeborn
Calhoun, Frank W. Albert Lea
Davis, F. W. Alden
Freeman, J. P. Glenville
Gramenz, F. Albert Lea

Kamp, Byron A. Albert Lea
McCreight, Geo. Albert Lea
Nannestad, J. R. Albert Lea
Palmer, W. L. Albert Lea
Rudolf, S. F. Albert Lea
Schaaf, F. H. K. Hartland
Schultz, J. A. Albert Lea

Houston-Fillmore County Medical Society

Regular meetings, May and August

Annual meeting in October**PRESIDENT**

Kendrick, W. N. Spring Valley

SECRETARY

Fischer, O. F. Houston

Anderson, Norman E. Harmony
Browning, W. E. Caledonia
Collins, J. S. Caledonia
Drake, F. A. Lanesboro
Eby, Cyrus B. Spring Valley

Grinnell, W. B. Preston
Helland, G. M. Spring Grove
Hvoslef, J. C. Lanesboro
Johnson, C. H. Spring Valley
Kibbe, O. A. Canton
Kierland, P. E. Harmony
Lannin, J. C. Mabel
Lommen, A. P. Lanesboro
Love, George A. Preston
Love, Geo. R. Preston
Nass, H. A. Mabel

Nelson, M. S. Spring Grove
Onsgard, C. K. Rushford
Onsgard, L. K. Houston
Rhines, D. C. Caledonia
Sather, E. R. Spring Valley
Simons, E. V. Spring Valley
Tierney, C. M. Granger
Uteley, J. D. St. Paul
Walker, J. D. Wykoff
Williams, R. V. Rushford
Woodruff, C. W. Chatfield

Mower County Medical Society

Regular meetings, second Wednesday in January, April, July, and October

Annual meeting in October**PRESIDENT**

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SECRETARY

Allen, C. C. Austin

Allen, A. W. Austin
Cobb, W. F. Lyle
Hegge, C. A. Austin
Hegge, O. H. Austin
Henslin, A. E. LeRoy
Leck, Clifford C. Austin

Lewis, C. F. Austin
McBroom, D. E. Adams
Mitchell, R. S. Grand Meadow
Moses, Joseph, Jr. Adams
Rebman, E. C. Austin
Schottler, G. J. Dexter
Torkelson, P. T. Lyle

Olmsted County Medical Society

Regular meetings, second week of every second month

Annual meeting in December

PRESIDENT
Smith, F. L.Eyota

SECRETARY
Meyering, Henry W...Rochester

Adams, A. S.Rochester
Adson, A. W.Rochester
Allen, Wilson A.Rochester
Archibald, A.Rochester
Balfour, D. C.Rochester
Berkman, D. M.Rochester
Braasch, W. F.Rochester
Bumpus, H. C.Rochester
Crenshaw, J. L.Rochester
Crewe, John E.Rochester
Dolder, F. C.Eyota
Eusterman, G. B.Rochester

Fawcett, Chas. E...Stewartville
Fisher, Carl.Rochester
Giffin, H. Z.Rochester
Graham, C.Rochester
Granger, C. T.Rochester
Granger, Gertrude B...Rochester
Hallenbeck, Dorr F...Rochester
Henderson, M. S.Rochester
Heyerdale, O. C.Rochester
Joyce, Geo. T.Rochester
Judd, E. S.Rochester
Kilbourne, A. F.Rochester
Linton, W. B.Rochester
Logan, A. H.Rochester
Masson, J. C.Rochester
Matthews, JustusRochester
Mayo, C. H.Rochester
Mayo, W. J.Rochester
Mosse, F. R.Rochester
Mussey, R. D.Rochester

New, G. B.Rochester
Ohlinger, L. B.Rochester
Plummer, H. S.Rochester
Plummer, W. A.Rochester
Pollock, Lee W.Rochester
Robinson, Samuel.Rochester
Rosenow, E. C.Rochester
Russell, H. R.Stewartville
Sanford, A. H.Rochester
Shelden, W. D.Rochester
Sistrunk, W. E.Rochester
Stacy, Leda.Rochester
Steven, George.Byron
Stokes, J. H.Rochester
Sutton, Geo. E.Rochester
Walker, J. C.Rochester
Willius, F. A.Rochester
Wilson, L. B.Rochester
Witherstine, H. H.Rochester

Steele County Medical Society

Regular meetings, first Tuesday in each month

Annual meeting in December

PRESIDENT
Hart, A. B.Owatonna

SECRETARY
Stewart, Allan B.Owatonna

Adair, John H.Owatonna
Andrist, J. W.Owatonna
Dailey, W. J.Bloomington
Ertel, E. Q.Ellendale
Melby, Benedik.Bloomington
Morehouse, G. G.Owatonna

Peterson, Christian ...Owatonna
Senn, E. W.Owatonna
Smersh, Francis M.Owatonna
Thimsen, N. C.Bloomington
Warren, J. W.Minneapolis

Waseca County Medical Society

Regular meeting and Annual meeting, second Monday in December

Annual meeting in January

PRESIDENT
Chamberlin, W. A.Waseca

SECRETARY
Rudolf, A. J.Waseca

Batchelder, E. J.New Richland
Blanchard, H. G.Waseca
Cory, Wm. M.Waterville
Hagen, H. O.New Richland

Joyce, T. M.Janesville
Lynn, J. F.Waseca
Meilicke, W. A.Janesville
O'Hara, J. J.Janesville
Swartwood, F. A.Waseca

Winona County Medical Society

Regular meetings, first Tuesday in January, April, July, and October

Annual meeting in January

PRESIDENT
Lindsay, W. V.Winona

SECRETARY
McGaughey, H. F.Winona
Bear, H. C.St. Charles
Clay, F. H.St. Charles
Gates, G. L.Winona

Heise, W. F. C.Winona
Keyes, E. D.Winona
Leicht, Oswald.Winona
Lester, C. A.Winona
Lichtenstein, H. M.Winona
Lynch, Elizabeth.Winona
Lynch, J. L.Winona
McLaughlin, E. M.Winona
Muir, Edwin S.Winona

Neumann, C. A.Lewiston
Neumann, W. H.Lewiston
Pritchard, D. B.Winona
Robbins, C. P.Winona
Rollins, F. H.St. Charles
Rosenberry, B. P.Winona
Schaefer, S.Winona
Scott, J. W.St. Charles
Tweedy, G. J.Winona

ALPHABETICAL ROSTER

Aanes, A. M.Clermont, Iowa
Aborn, W. H.Dilworth
Abbott, A. W.Minneapolis
Abbott, J. S.St. Paul
Abbott, Wm. P.Duluth
Abramovich, J. H.St. Paul
Adair, F. L.Minneapolis
Adams, B. S.Hibbing
Adair, John H.Owatonna
Adams, A. S.Rochester
Adams, J. L.Morgan
Adams, R. C.Bird Island
Adams, R. T.Mantorville
Adams, W. T.Elgin
Adkins, C. M.Grygla
Adson, A. W.Rochester
Ahrens, A. E.St. Paul
Ahrens, A. E.St. Paul
Aitkens, H. B.Le Sueur Center
Aldes, Harry.St. Paul
Aldrich, Flora C.Anoka
Aldrich, F. H.Belview

Alexander, F. H.St. Paul
Allen, A. W.Austin
Allen, C. C.Austin
Allen, F. H.Staples
Allen, H. W.Minneapolis
Allen, Mason.St. Paul
Allen, R. W.Heron Lake
Allen, Wilson A.Rochester
Ancker, A. B.St. Paul
Andersen, Arnt G.Minneapolis
Anderson, A. E.Minneapolis
Anderson, C. A.Rush City
Anderson, J. D.Minneapolis
Anderson, J. V.Red Wing
Anderson, Norman E.Harmony
Anderson, W. S.Grand Forks
Andres, John H.Duluth
Andrews, J. W.Mankato
Andrews, Roy.Mankato
Andrist, J. W.Owatonna
Araouni, Khalil.St. Paul

Archibald, A.Rochester
Archibald, F. M.Mahnomen
Arends, A. L.St. Paul
Arey, H. C.Excelsior
Arminen, K. V.Duluth
Armstrong, J. M.St. Paul
Arneson, Thomas.Climax
Arnold, E. W.Bigelow
Arzt, C. P.St. Paul
Arzt, Herbert L.Jackson
Aune, Martin.Minneapolis
Aurand, W. H.Minneapolis
Aurness, P. A.Minneapolis
Austin, Edward E.Minneapolis
Avery, J. Fowler.Minneapolis
Awty, W. J.Moorhead
Axilrod, D. L.Hutchinson
Ayers, Geo. T.Ely
Aylmer, A. L.Minneapolis
Babcock, F. M.Northfield
Bacon, C. G.Marshall
Bacon, H. P.Milaca

Bacon, Knox.....St. Paul
 Bacon, L. C.....St. Paul
 Bacon, R. S.....Montevideo
 Baier, Florence C.....Minneapolis
 Bailey, H. B.....Ceylon
 Baker, A. C.....Fergus Falls
 Baker, A. L.....Kasson
 Baker, A. T.....Minneapolis
 Baker, E. L.....Minneapolis
 Baker, Looe.....Minneapolis
 Bakke, O. H.....Minneapolis
 Balcome, F. E.....St. Paul
 Balcom, G. G.....Lake Wilson
 Balfour, D. C.....Rochester
 Ball, C. R.....St. Paul
 Ballard, J. A.....Hayward, Wis.
 Barber, J. P.....Minneapolis
 Barclay, A.....Cloquet
 Barney, Leon A.....Duluth
 Barr, W. H.....Wells
 Barrett, E. E.....Glencoe
 Barron, Moses.....Minneapolis
 Barsness, Nellie.....St. Paul
 Barton, E. R.....Frazee
 Bass, G. W.....Minneapolis
 Baskett, Geo. T.....St. Peter
 Baskett, Olive T.....St. Peter
 Batchelder, E. J.....New Richland
 Baxter, D. E.....New York City
 Baxter, S. H.....Minneapolis
 Bayley, E. H.....Lake City
 Beach, Geo. W. State Sanatorium
 Beadie, W. D.....St. Paul
 Bear, H. C.....St. Charles
 Beaty, J. H.....St. Cloud
 Beaudoux, H. A.....St. Paul
 Beckley, F. L.....St. Paul
 Beebe, Warren L.....St. Cloud
 Beise, R. A.....Brainerd
 Bell, J. W.....Minneapolis
 Belt, W. E.....Dodge Center
 Benedict, E. E.....Minneapolis
 Benepe, L. M.....St. Paul
 Benham, E. W.....Mankato
 Benjamin, A. E.....Minneapolis
 Benn, F. G.....Minneapolis
 Bennion, P. H.....St. Paul
 Benoit, F. T.....Madison
 Benson, G. E.....Minneapolis
 Benson, I. S.....Willmar
 Berg, S. A.....Granite Falls
 Berge, P. L.....Brainerd
 Bergh, L. N.....Montevideo
 Bergquist, K. E.....Duluth
 Berkman, D. M.....Rochester
 Berrisford, P. D.....St. Paul
 Bertelsen, O. L.....Crookston
 Berthold, J. L.....Perham
 Bessenes, A. N.....Minneapolis
 Bessenes, W. A.....Albert Lea
 Bettingen, J. W.....St. Paul
 Beyer, A. G.....Red Wing
 Bigelow, Chas. E. Dodge Center
 Binger, H. E.....St. Paul
 Biorn, N. A.....Jackson
 Birnberg, T. L.....St. Paul
 Bishop, Chas. W.....Minneapolis
 Bissell, Frank S.....Minneapolis
 Blacklock, S. S.....Hibbing
 Blake, James.....Hopkins
 Blakely, C. C.....St. Peter
 Blanchard, H. G.....Waseca
 Blegen, H. M.....Warren
 Bleifuss, W. F.....Elgin
 Blomburgh, A. F.....Minneapolis
 Blong, P. H.....Elmore
 Bock, R. A.....St. Paul
 Bockman, M.....Minneapolis
 Boeckmann, Eduard.....St. Paul
 Boeckmann, Egil.....St. Paul
 Boehm, J. C.....St. Cloud
 Rohland, E. H.....St. Paul
 Bole, R. S.....St. Paul
 Boleyn, E. S.....Stillwater
 Bolles, D. W.....Minneapolis
 Bolsta, Chas.....Ortonville
 Bolstad, H. C.....St. Paul
 Bong, J. H.....Jasper
 Booth, A. E.....Minneapolis
 Boreen, Clifton A.....Minneapolis
 Borreson, B.....Warren
 Bossingham, O. N.....Lake Benton
 Bosworth, Robinson.....St. Paul
 Bouman, H. A.....Minneapolis
 Bowers, J. T.....Gully
 Boyd, L. M.....Alexandria
 Boyer, S. H.....Duluth
 Boyesen, Peter.....Pelican Rapids
 Braasch, W. F.....Rochester

Bracken, H. M.....Minneapolis
 Braden, A. J.....Duluth
 Brady, P. J.....Hastings
 Brand, W. A.....Redwood Falls
 Branton, B. J.....Willmar
 Bratrud, O. E.....Fertile
 Bratrud, Theo. Grand Forks, N. D.
 Bray, C. W.....Biwabik
 Bray, E. R.....St. Paul
 Briggs, F. W.....Moorhead
 Brigham, Charles F.....St. Cloud
 Brigham, F. T.....Watkins
 Brimhall, J. B.....St. Paul
 Broberg, J. A.....Blue Earth
 Brodie, Walter D.....St. Paul
 Brooks, Charles N.....Minneapolis
 Brooks, D. F.....St. Paul
 Brooks, G. F.....Hibbing
 Brown, A. H.....Pipestone
 Brown, E. D.....Minneapolis
 Brown, E. I.....St. Paul
 Brown, E. J.....Minneapolis
 Brown, J. C.....St. Paul
 Brown, LeRoy.....St. Paul
 Brown, Paul F.....Minneapolis
 Brown, R. S.....Minneapolis
 Browning, W. E.....Caledonia
 Brunet, M. L.....Cloquet
 Bryant, Oliver.....Minneapolis
 Buck, Fred H.....Shakopee
 Buckley, E. W.....St. Paul
 Bullen, F. W.....Hibbing
 Bumpus, H. C.....Rochester
 Burch, F. E.....St. Paul
 Burfiend, G. H.....Afton
 Burnap, W. L.....Fergus Falls
 Burns, F. W.....Montevideo
 Burns, H. D.....Albert Lea
 Burns, M. A.....Milan
 Burns, R. L.....Two Harbors
 Burton, C. N.....Blue Earth
 Butler, John.....Minneapolis
 Butturff, C. R.....Freeborn
 Butz, J. A.....Monterey
 Byrnes, W. J.....Minneapolis
 Cabot, Verne S.....Bowerville
 Caine, C. E.....Morris
 Caldwell, J. P.....Marble
 Calhoun, Frank W.....Albert Lea
 Cameron, J. A.....St. Paul
 Camp, W. E.....Minneapolis
 Campbell, Claude M.....Bricelyn
 Campbell, E. P.....St. Paul
 Campbell, L. M.....Minneapolis
 Campbell, J. E.....South St. Paul
 Campbell, R. A.....Minneapolis
 Canfield, H. E.....Willmar
 Cannady, E. E.....Prior Lake
 Cannon, Harry.....St. Paul
 Carlaw, C. M.....Minneapolis
 Carman, Chas. L.....St. Paul
 Carman, J. E.....Detroit
 Carroll, Wm. C.....St. Paul
 Cary, H. E.....Minneapolis
 Carstens, C. F.....Hibbing
 Catlin, John J.....Buffalo
 Catlin, T. J.....Palisade
 Cavanaugh, J. O.....St. Paul
 Cavanor, F. T.....Minneapolis
 Chadbourn, A. G.....Heron Lake
 Chamberlin, J. W.....St. Paul
 Chamberlin, W. A.....Waseca
 Chambers, W. C.....Blue Earth
 Chapman, T. L.....Duluth
 Chapman, W. E.....Litchfield
 Charpentier, A. A.....St. Paul
 Chatterton, C. C.....St. Paul
 Cheney, E. L.....Duluth
 Chowning, W. M.....Minneapolis
 Christenson, C. R.....Starbuck
 Christensen, E. P. Two Harbors
 Christiansen, Andrew.....St. Paul
 Christie, G. R.....Long Prairie
 Christie, J. T.....St. Paul
 Chikler, A. A.....Minneapolis
 Clair, J. B.....Winsted
 Clark, C. H.....Duluth
 Clark, F. F.....Duluth
 Clark, H. S.....Minneapolis
 Clark, T. C. Soldiers' Home.....Minneapolis
 Clay, E. M.....Renville
 Clay, F. H.....St. Charles
 Clayton, L. E.....Red Wing
 Clement, J. B.....Lester Prairie
 Clifford, F. F.....West Concord
 Cobb, W. F.....Lyle
 Cobb, S. G.....St. Paul

Cochrane, W. J.....Lake City
 Cohen, H. A.....Minneapolis
 Cole, A. B.....Fergus Falls
 Cole, Herman B.....Franklin
 Collie, H. G.....McGregor
 Collins, Arthur N.....Duluth
 Collins, J. S.....Caledonia
 Collins, Homer C.....Duluth
 Colvin, A. R.....St. Paul
 Comstock, A. E.....St. Paul
 Condit, W. H.....Minneapolis
 Conheim, Eva.....St. Paul
 Conkey, C. D.....Duluth
 Conley, A. A.....Cannon, Falls
 Conley, A. T.....Cannon Falls
 Cook, H. W.....Minneapolis
 Cook, Paul B.....St. Paul
 Cooney, H. C.....Princeton
 Corbett, J. F.....Minneapolis
 Corrigan, J. E.....Spoonerville
 Cory, Wm. M.....Waterville
 Cosman, E. O.....Minneapolis
 Courtney, Walter.....Brainerd
 Coventry, W. A.....Duluth
 Covey, Herman W.....St. Peter
 Cowern, E. W.....North St. Paul
 Cowles, D. C.....Minneapolis
 Crafts, L. M.....Minneapolis
 Crandall, A. M.....Fairfax
 Cramer, R. R.....Minneapolis
 Cremer, M. H.....Red Wing
 Cremer, P. H.....Hastings
 Crenshaw, J. L.....Rochester
 Cress, P. J.....Ellsworth
 Crewe, John E.....Rochester
 Crosby, J. A.....Minneapolis
 Cross, J. G.....Minneapolis
 Crowe, J. H.....Virginia
 Crume, Geo. P.....Minneapolis
 Curran, G. R.....Mankato
 Cutts, G. A. C.....Grove City

Dahl, G. A.....Mankato
 Dahlquist, G. W.....Lancaster
 Daignault, Oscar.....Benson
 Dailey, W. J.....Blooming Prairie
 Dampier, C. E.....Crookston
 Daniels, J. W.....St. Peter
 Danielson, Karl A.....Litchfield
 Darling, J. E.....St. Paul
 Darrow, Daniel C.....Moorhead
 Daugherty, E. B.....St. Paul
 Daugherty, L. E.....St. Paul
 Davidson, P. C.....Willmar
 Davis, F. U.....Faribault
 Davis, F. W.....Alden
 Davis, Herbert.....St. Paul
 Davis, Horace S.....Duluth
 Davis, Irwin Grant.....Duluth
 Davis, L. A.....Wadena
 Davis, William.....St. Paul
 De Boer, Hermanus.....Edgerton
 Dedolph, Karl.....St. Paul
 Delmore, J. L.....Roseau
 Dempsey, D. P.....Kellogg
 Denman, A. V.....Mankato
 Dennis, W. A.....St. Paul
 Denny, C. F.....St. Paul
 Deslauriers, A. A.....Duluth
 Desmond, M. A.....Eveleth
 Dewar, John Evan.....Minneapolis
 Dewey, G. W.....Fairmont
 Deziel, G.....Minneapolis
 Dickson, T. H., Jr.....St. Paul
 Disen, C. F.....Minneapolis
 Dittman, Geo. C.....St. Paul
 Dodge, Franklin A.....Le Sueur
 Dodge, W. M.....Farmington
 Dohm, A. J.....St. Paul
 Dohm, C. L.....St. Paul
 Dolan, C. P.....Worthington
 Dolder, F. C.....Eyota
 Doms, H. C.....Slayton
 Donaldson, C. A.....Minneapolis
 Donovan, J. J.....Litchfield
 Douglass, J. E., Thief River Falls
 Doupe, R. G.....Upsala
 Doxey, G. L.....Minneapolis
 Drake, C. B.....St. Paul
 Drake, C. R.....Minneapolis
 Drake, F. A.....Lanesboro
 Dredge, H. P.....Sandstone
 Drenning, F. C.....Duluth
 Dreisbach, N.....Minneapolis
 Drought, W. W.....Fergus Falls
 Dryden, F. M.....Crookston
 DuBois, Julian A.....Sauk Center
 DuBois, Julian F.....Sauk Center
 Duclos, J. A.....Henderson

Dudley, J. H. Windom
 Duncan, H. Marietta
 Dunlop, A. H. Crookston
 Dunn, John B. St. Cloud
 Dunsmoor, F. A. Minneapolis
 Durgin, F. L. Winnebago
 Dutton, C. E. Minneapolis
 Earl, George A. St. Paul
 Earl, R. O. St. Paul
 Eaton, W. H. Worthington
 Eberlin, E. A. Glenwood
 Eby, Cyrus B. Spring Valley
 Eckstein, A. W. Comfrey
 Edmunds, I. L. Clearwater
 Egan, John M. Minneapolis
 Egen, O. K. Minneapolis
 Ehmke, W. C. Willow River
 Eirley, Clara S. St. Peter
 Eisengraeber, G. A. Granite Falls
 Eisenman, W. G. Chisholm
 Eitel, Geo. G. Minneapolis
 Ekblad, J. W. Duluth
 Eklund, J. J. Duluth
 Eklund, Wm. J. Duluth
 Ellison, Frank E. Monticello
 Elsev, J. R. Glenwood
 Engberg, Edw. John. St. Paul
 Engstad, J. E. Minneapolis
 Engstrom, F. A. Hills
 Erdmann, Chas. A. Minneapolis
 Ericson, J. G. Minneapolis
 Ernest, Geo. C. St. Paul
 Ertel, E. Q. Ellendale
 Eshelby, E. C. St. Paul
 Esser, John. Perham
 Estrem, C. O. Fergus Falls
 Eusterman, G. B. Rochester
 Evert, J. A. Brainerd
 Ewing, C. F. Wheaton
 Fahey, E. W. Duluth
 Farr, R. E. Minneapolis
 Farrage, Jas. Breckenridge
 Farrish, R. C. Sherburne
 Fawcett, Chas. E. Stewartville
 Feidt, W. W. Minneapolis
 Ferguson, J. C. St. Paul
 Ferguson, James B. St. Paul
 Field, Merton. St. Peter
 Fiheld, Emily W. Minneapolis
 Finley, W. F. Lonsdale
 Fisher, Carl. Rochester
 Fischer, O. F. Houston
 Fischer, P. M. Shakopee
 Fitzgerald, E. T. Morris
 Fjelstad, C. A. Red Wing
 Fjelstad, Carl A. Minneapolis
 Flagg, S. D. St. Paul
 Fleischhauer, D. S. Wabasha
 Fleming, A. S. Minneapolis
 Fleming, James. Cloquet
 Flinn, Thos. E. Redwood Falls
 Flower, Ward Z. Gibbon
 Fogarty, Chas. W. St. Paul
 Forbes, R. S. Duluth
 Foster, Burnside. St. Paul
 Fox, J. M. Minneapolis
 Francis, S. O. White Bear
 Franzen, H. G. Minneapolis
 Frasier, Geo. W. Hill City
 Freeborn, J. A. Fergus Falls
 Freeman, Charles D. St. Paul
 Freeman, Geo. H. Willmar
 Freeman, J. P. Glenville
 Freeman, W. L. Foley
 French, E. A. Plainview
 Friesleben, William. Sauk Rapids
 Frisch, Frank P. Kimball
 Fritsche, L. A. New Ulm
 Froehlich, H. W. Thief River Falls
 Frost, E. H. Willmar
 Furber, W. W. Cottage Grove
 Gaag, Edward W. Havre, Mont.
 Gaines, E. C. Buffalo Lake
 Gambell, F. H. Thief River Falls
 Gammell, H. W. Madison
 Gardner, E. L. Minneapolis
 Gates, C. E. Goodhue
 Gates, G. L. Winona
 Gates, J. A. Kenyon
 Gauger, E. C. St. Paul
 Gaugh, W. H. Granada
 Geist, Emil S. Minneapolis
 Geist, Geo. A. St. Paul
 Gelz, John J. Richmond
 George, J. W. Minneapolis
 Germa, Chas. Palaton
 Ghent, C. H. St. Paul

Ghent, M. M. St. Paul
 Gibbon, L. L. Lowry
 Giessler, Paul W. Minneapolis
 Giffin, H. Z. Rochester
 Gillfillan, J. S. St. Paul
 Gilkinson, A. J. Osakis
 Gillespie, N. H. Duluth
 Gillette, A. J. St. Paul
 Gilmore, R. T. Bemidji
 Giroux, A. A. Duluth
 Gleysteen, D. V. Lamberton
 Glycer, R. T. Broton
 Goehrs, H. W. Melrose
 Goltz, E. V. St. Paul
 Gordon, G. J. Minneapolis
 Gosslee, A. F. Pillager
 Gosslee, G. L. Moorhead
 Gotham, C. L. St. Paul
 Graham, C. Rochester
 Graham, David. Duluth
 Graham, R. Duluth
 Graham, R. D. Duluth
 Gramenz, F. Albert Lea
 Granger, C. T. Rochester
 Granger, Gertrude B. Rochester
 Gratzek, Thos. St. Paul
 Gravelle, J. M. A. St. Paul
 Graves, Carlton. Aitkin
 Grawn, F. A. Duluth
 Gray, C. E. Rush City
 Gray, F. D. Marshall
 Greeley, L. Q. Duluth
 Green, E. F. St. Cloud
 Greene, Charles Lyman. St. Paul
 Green, E. K. Minneapolis
 Grimes, H. B. Madelia
 Grinnell, W. B. Preston
 Groll, S. Minneapolis
 Ground, H. T. Virginia
 Grover, F. C. Duluth
 Groves, A. F. Brainerd
 Guilford, H. M. Minneapolis
 Guilfoyle, J. P. Stephens
 Gulde, W. C. Minneapolis
 Gullixson, Andrew. Briceyn
 Gunderson, H. J. Minneapolis
 Gunderson, R. M. Lake Park
 Gunz, A. N. Centre City

Hacking, F. H. Minneapolis
 Haessly, S. B. Faribault
 Hagen, G. L. Minneapolis
 Hagen, H. O. New Richland
 Hagen, O. E. Butterfield
 Hagen, Ole J. Moorhead
 Haggard, G. D. Minneapolis
 Haight, G. G. Audubon
 Hall, A. R. St. Paul
 Hall, J. M. Minneapolis
 Hall, Pearl M. Minneapolis
 Hall, W. A. Minneapolis
 Hallenbeck, Dorr F. Rochester
 Hollowell, W. H. Minneapolis
 Hamel, C. E. Minneapolis
 Hamilton, A. S. Minneapolis
 Hammermeister, T. F. New Ulm
 Hammerstrand, F. L. Sacred Heart
 Hammes, E. M. St. Paul
 Hand, W. R. Elbow Lake
 Haney, C. L. Duluth
 Hansen, Henry V. New London
 Hansen, Olga S. Minneapolis
 Hanson, A. M. Faribault
 Hanson, H. H. Greenbush
 Harding, J. C. St. Paul
 Hare, E. R. Minneapolis
 Harrah, J. V. Minneapolis
 Harriman, L. Howard Lake
 Harrington, C. D. Minneapolis
 Harrison, E. E. West Concord
 Hart, A. B. Owatonna
 Hartung, H. A. Le Sueur
 Hartzell, Thos. B. Minneapolis
 Haskell, A. D. Alexandria
 Haugan, O. M. Fergus Falls
 Hauge, M. M. Clarkfield
 Haugen, G. T. Battle Lake
 Haugseth, Enoch. Twin Valley
 Havens, J. G. W. Cloquet
 Haverfield, Addie R. Minneapolis
 Hawkins, E. P. Montrose
 Hayes, Edward W. Brown Valley
 Hayes, James M. Brown Valley
 Haynes, B. H. St. James
 Haynes, F. E. Minneapolis
 Haywood, Geo. M. Minneapolis
 Head, Geo. D. Minneapolis
 Heagerty, W. B. Mazeppa

Healy, R. T. Pierz
 Heath, A. C. St. Paul
 Hedback, A. E. Minneapolis
 Hegge, C. A. Austin
 Hegge, O. H. Austin
 Helmark, J. H. Hawley
 Helmark, O. E. Duluth
 Heise, W. F. C. Winona
 Helk, H. H. Minneapolis
 Helland, G. M. Spring Grove
 Henderson, M. S. Rochester
 Henderson, A. Powell River, B. C.
 Hendrickson, J. F. Minneapolis
 Henriksen, H. G. New Market
 Henry, C. E. Minneapolis
 Hensel, Charles N. St. Paul
 Henslin, A. E. LeRoy
 Hesselgrave, S. S. St. Paul
 Heyerdale, O. C. Rochester
 Hieber, H. G. Thief River Falls
 Hiebert, J. P. Minneapolis
 Hielscher, Helen H. Mankato
 Hielscher, J. A. Mankato
 Higbee, Paul A. Minneapolis
 Higgins, J. H. Minneapolis
 Hilbert, Pierre A. Melrose
 Hilger, A. W. St. Paul
 Hilger, D. D. St. Paul
 Hilger, J. M. Iona
 Hilger, L. A. St. Paul
 Hill, Eleanor J. Minneapolis
 Hill, R. J. Minneapolis
 Hirschboech, F. J. Buhl
 Hirschfield, Adolph. Minneapolis
 Hirschfield, M. S. Duluth
 Hitchings, W. S. Lakefield
 Hobbs, C. A. Minneapolis
 Hodge, S. V. Minneapolis
 Hodgson, H. H. Crookston
 Hoegh, Knut. Minneapolis
 Hoff, Alfred. Minneapolis
 Hoff, Peder A. St. Paul
 Hoffmann, J. St. Paul
 Hoidale, A. D. Tracy
 Hoiland, A. S. Argyle
 Hoyt, Edward E. Detroit
 Holbrook, J. S. Mankato
 Holcomb, J. T. St. Paul
 Holcomb, O. W. St. Paul
 Holdridge, Geo. A. Foley
 Holl, P. M. Minneapolis
 Hollands, Wm. H. Fisher
 Holm, P. F. Wells
 Holman, C. J. Mankato
 Holmberg, L. J. Canby
 Holst, C. F. Little Falls
 Holst, J. B. Little Falls
 Holte, H. Crookston
 Horning, D. W. Minneapolis
 Houston, C. A. Park Rapids
 Hovorka, T. W. Albany
 Howard, S. E. Slayton
 Hubert, R. L. St. Paul
 Hukenkens, E. J. Minneapolis
 Humphrey, E. W. Moorhead
 Hunt, F. N. Fairmont
 Hunt, H. E. St. Paul
 Hunt, R. C. Fairmont
 Hunt, W. A. Northfield
 Hunte, A. F. Truman
 Hursh, M. M. Grand Rapids
 Huxley, F. R. Faribault
 Hvoslaf, Jakob. Minneapolis
 Hvoslaf, J. C. Lanesboro
 Hynes, James. Minneapolis
 Hynes, J. E. Minneapolis
 Ide, A. W. Brainerd
 Iden, B. F. Minneapolis
 Ikeda, Kano. Minneapolis
 Irvine, H. G. Minneapolis
 Irwin, A. F. Cleveland, Ohio
 Jacobs, J. C. Willmar
 Jacquot, G. L. Ivanhoe
 James, J. H. Mankato
 Jamieson, Earl. Walnut Grove
 Jarvis, B. W. St. Paul
 Jensen, J. C. Hendricks
 Jensen, M. J. Minneapolis
 Jensen, T. J. Duluth
 Jesion, Jos. Wm. St. Paul
 Johnson, A. E. Minneapolis
 Johnson, A. E. Red Wing
 Johnson, Asa M. St. Paul
 Johnson, Christian. Willmar
 Johnson, C. H. Spring Valley
 Johnson, C. M. Dawson
 Johnson, E. W. Bemidji
 Johnson, Geo. L. Newfolden

Johnson, Hans.....	Kerkhoven	Langenderfer, F. V.....	St. Paul	McGiffert, E. N.....	Duluth
Johnson, H. C.....	St. Paul	Lankester, Howard.....	St. Paul	McGroarty, J. J.....	St. Paul
Johnson, H. M.....	Dawson	Lannin, J. C.....	Mabel	McGuigan, H. T.....	Red Wing
Johnson, H. P.....	Fairmont	Lapierre, C. A.....	Minneapolis	McHugh, R. F.....	Coleraine
Johnson, James A.....	Minneapolis	Larsen, C. L.....	St. Paul	McIntosh, Harry C.....	St. Paul
Johnson, Julius.....	Minneapolis	Larsen, O. O.....	Detroit	McIntyre, E. H.....	Virginia
Johnson, Nimrod A.....	Minneapolis	Laurent, A. A.....	Minneapolis	McIntyre, Geo.....	Minneapolis
Johnson, O. F.....	Winthrop	La Vake, R. T.....	Minneapolis	McIntyre, G. W.....	St. Peter
Johnson, O. V.....	Sebek	Law, A. A.....	Minneapolis	McKeon, Owen.....	St. Paul
Johnson, R. A.....	Minneapolis	Laws, C. H.....	Ann Arbor, Mich.	McKeown, E. G.....	Edgerton
Johnson, T. H.....	St. Paul	Leach, W. D.....	Callaway	McLaren, Jennette M.....	St. Paul
Johnson, S. M.....	Buhl	Leahy, Bartholomew.....	St. Paul	McLaughlin, E. M.....	Winona
Johnston, E. B.....	Benson	Leavitt, H. H.....	Minneapolis	McLaughlin, J. A.....	Minneapolis
Jones, A. W.....	Red Wing	Leavitt, Frederick E.....	St. Paul	McMahon, D. J.....	Raymond
Jones, D. N.....	Minneapolis	Leck, Clifford C.....	Austin	McNevin, C. F.....	St. Paul
Jones, E. M.....	St. Paul	Le Clerc, Joseph E.....	Le Sueur	MacDonald, D. A.....	Minneapolis
Jones, Herbert W.....	Minneapolis	Lee, John W.....	Minneapolis	MacDonald, I. C.....	Minneapolis
Jones, R. N.....	Minneapolis	Lee, Thos. G.....	Minneapolis	MacLaren, Archibald.....	St. Paul
Jones, W. A.....	Minneapolis	Lee, W. A.....	Underwood	Macnie, J. S.....	Minneapolis
Josewich, Alex.....	Minneapolis	Lee, W. N.....	Madison	Maercklein, I. R.....	Renville
Joyce, Geo. T.....	Rochester	Lee, W. P.....	Northfield	Magie, W. H.....	Duluth
Joyce, T. M.....	Janesville	Leebens, John H.....	Lismore	Maitland, David P.....	Jackson
Judd, E. S.....	Rochester	Leibold, H. H.....	Parkers Prairie	Maland, C. O.....	Minneapolis
Just, A. A.....	Crookston	Leicht, Oswald.....	Winona	Malmgren, C. V.....	Virginia
Kabrick, O. A.....	Odin	Leigh, H. J.....	Lakefield	Maloney, T. J.....	St. Paul
Kaess, A. J.....	Fargo, N. D.	Leitch, Arch.....	St. Paul	Manley, J. R.....	Duluth
Kahala, Arthur.....	Crookston	Leland, M. N.....	Minneapolis	Mann, A. T.....	Minneapolis
Kalinoff, D.....	Stillwater	Leland, J. T.....	Herman	Manson, F. M.....	Worthington
Kamp, Byron A.....	Albert Lea	Lemieux, Israel.....	Red Lake Falls	Marley, W. J.....	Minneapolis
Kanne, C. W.....	Arlington	Lenont, C. B.....	Virginia	Marcum, E. H.....	Bemidji
Kannery, E. L.....	St. Paul	Lepak, F. J.....	Duluth	Mark, D. B.....	Minneapolis
Karn, B. R.....	Ortonville	Leiche, Wilhelm.....	St. Paul	Marken, M. H.....	Boyd
Kavanagh, K. S.....	Minneapolis	Lester, C. A.....	Winona	Martin, T. R.....	Duluth
Kelly, B. W.....	Aitkin	Leuty, Amos.....	Morris	Martineau, Jos. L.....	St. Paul
Kelly, E. S.....	Minneapolis	Lewis, C. B.....	St. Cloud	Masson, J. C.....	Rochester
Kelly, John V.....	St. Paul	Lewis, C. F.....	Austin	Matchan, Glen R.....	Minneapolis
Kelly, Paul H.....	St. Paul	Lewis, Edwin J.....	Sauk Center	Matthews, Justus.....	Rochester
Kelly, T. C.....	Mankato	Lewis, J. B.....	South St. Paul	Mattson, J. A.....	Chicago City
Kelsey, C. G.....	Hinckley	Lewis, J. D.....	Minneapolis	Maurer, E. L.....	Brownston
Kemp, A. F.....	Mankato	Lewis, W. W.....	St. Paul	Maxeiner, Stanley R.....	Minneapolis
Kendrick, W. N.....	Spring Valley	Lexa, F. J.....	Lonsdale	May, C. C.....	Adrian
Kennedy, C. C.....	Minneapolis	Litchfield, J. T.....	Minneapolis	May, C. E.....	Minneapolis
Kennedy, Jane F.....	Minneapolis	Lichtenstein, H. M.....	Winona	May, W. H.....	Minneapolis
Kennedy, R. R.....	Minneapolis	Liedloff, A. G.....	Mankato	Mayland, M. L.....	Faribault
Kern, M. J.....	St. Cloud	Lima, Ludwig.....	Montevideo	Mayo, C. H.....	Rochester
Kerns, H.....	Granite Falls	Lind, C. J.....	Minneapolis	Mayo, W. J.....	Rochester
Kerrick, Stanley E.....	Minneapolis	Linde, Herman.....	Cyrus	Mead, Marion A.....	Minneapolis
Kesting, Herman.....	St. Paul	Lindsay, W. V.....	Winona	Meade, Charles J.....	St. Paul
Keyes, C. R.....	Duluth	Linnemann, N. L.....	Duluth	Meckstroth, C. W.....	Brandon
Keves, E. D.....	Winona	Linner, H. P.....	Minneapolis	Mee, P. H.....	Osseo
Kibbe, O. A.....	Canton	Linton, W. B.....	Rochester	Meierding, W. A.....	Springfield
Kiefer, M. A.....	Sleepy Eye	Little, De Willis.....	Appleton	Meighen, J. W.....	Ulen
Kierland, P. E.....	Harmony	Little, J. W.....	Minneapolis	Mellicke, W. A.....	Janesville
Kiesling, I. H.....	Hibbing	Little, W. J.....	St. Paul	Meland, O. N.....	Detroit
Kilbourne, A. F.....	Rochester	Lloyd, H. J.....	Mankato	Melby, Benedik.....	Blooming Prairie
Kilbride, J. S.....	Canby	Litzenberg, J. C.....	Minneapolis	Melzer, G. R.....	Hoffman
Kimball, H. H.....	Minneapolis	Loberg, A. F.....	Minneapolis	Merrill, B. J.....	Stillwater
King, Emil.....	Fulda	Logan, A. H.....	Rochester	Merritt, Geo. F.....	St. Peter
King, E. A.....	Minneapolis	Lommen, A. P.....	Lanesboro	Mesker, G. H.....	Olivia
Kirk, A. B.....	Chisholm	Long, Jesse.....	Minneapolis	Metcalf, F. W.....	Winton
Kirk, G. P.....	E. Grand Forks	Love, Geo. A.....	Preston	Metcalf, J. N.....	Monticello
Kirmse, Geo. W.....	Minneapolis	Love, Geo. R.....	Preston	Meyer, E. L.....	Minneapolis
Kirsch, Ralph L.....	Crookston	Lowe, L. M.....	Glyndon	Meyerding, E. A.....	St. Paul
Kistler, A. S.....	St. Paul	Lowe, Thomas.....	Pipeston	Meyerding, Henry W.....	Rochester
Kistler, C. M.....	Minneapolis	Lowthian, G. H.....	Fulton, S. D.	Michael, J. C.....	St. Paul
Kistler, J. M.....	Minneapolis	Luck, Hilda.....	Mankato	Michelson, H. E.....	Virginia
Kittelson, T. N.....	Fergus Falls	Luedtke, G. H.....	Fairmont	Mikkelsen, M.....	Wells
Kjelland, J. S.....	Crookston	Luffkin, H. M.....	St. Paul	Miller, Henrietta P.....	Cloquet
Klein, Harry.....	Duluth	Lum, C. E.....	Duluth	Miller, Hugo H.....	Harvey, N. D.
Klein, H. N.....	St. Paul	Lundgren, A. C.....	Minneapolis	Miller, Victor L.....	Mankato
Knauff, M. K.....	Two Harbors	Lynam, Frank.....	Duluth	Miller, W. A.....	New York Mills
Knickerbocker, Frank H.....	Stanley	Lynch, Elizabeth.....	Winona	Millsbaugh, J. G.....	Little Falls
Knight, H. L.....	Minneapolis	Lynch, J. L.....	Winona	Mitchell, Frederick J.....	St. Paul
Knight, R. R.....	Minneapolis	Lynch, M. J.....	Minneapolis	Mitchell, R. S.....	Grand Meadow
Knight, Ralph T.....	Minneapolis	Lyng, John A.....	Fergus Falls	Moe, Anton J.....	Heron Lake
Knight, S. G.....	Randall	Lynn, J. F.....	Waseca	Moersch, Fred P.....	Minneapolis
Knights, F. A.....	Pequot	Lysne, Henry.....	Minneapolis	Mogilner, S. N.....	St. Paul
Koch, John.....	Blackduck	McBroom, D. E.....	Adams	Moir, Wm. W.....	Minneapolis
Kohler, Geo. A.....	Minneapolis	McCarthy, W. J.....	Madelia	Mooney, G. R.....	Belle Plaine
Koller, L. R.....	Minneapolis	McCarthy, W. R.....	St. Paul	Molzahn, H. E.....	St. Paul
Kraft, Peter.....	Duluth	McClanahan, J. H.....	White Bear	Moore, J. E.....	Minneapolis
Kremer, W. J.....	Minneapolis	McCloud, C. N.....	St. Paul	Moore, W. J.....	Wood Lake
Kriedt, Dan'l.....	Minneapolis	McCollom, C. A.....	Minneapolis	Moorehead, Martha B.....	Minneapolis
Kucera, W. J.....	New Prague	McComb, C. F.....	Duluth	More, C. W.....	Eveth
Kuhlmann, August.....	Melrose	McCoy, J. E.....	Ironston	Morehouse, G. G.....	Owatonna
Kurz, John.....	Cook	McCoy, Mary K.....	Duluth	Moren, E.....	Minneapolis
Kusske, A. L.....	Hutchinson	McCrea, James.....	Fulda	Mork, B. O.....	Worthington
Kuth, Jos. R.....	Duluth	McCright, Geo.....	Albert Lea	Morley, G. A.....	Crookston
Kvitrud, Gilbert.....	Grasston	McCuen, J. A.....	Duluth	Morrison, A. W.....	Minneapolis
Lagerstrom, F. G.....	Lindstrom	McCusker, C. F.....	Minneapolis	Morris, C. R.....	Zumbrota
Laird, A. T.....	Nopeming	McDavitt, Thos.....	St. Paul	Morse, John H.....	Minneapolis
Lajole, J. M.....	Minneapolis	McDermott, T. E.....	Minneapolis	Mortensen, N. G.....	St. Paul
Lamb, Harold L.....	Sauk Center	McDonald, A. L.....	Duluth	Morton, H. McI.....	Minneapolis
Laney, R. L.....	Brown Valley	McDonald, H. N.....	Minneapolis	Moses, Joseph, Jr.....	Adams
Lande, Wm. B.....	St. Paul	McDonald, D. W.....	Le Sueur	Mosse, F. R.....	Rochester
Landen, F. G.....	Stillwater	McDowell, J. P.....	Sauk Rapids	Moynihan, A. F.....	Sauk Center
Landenberger, John.....	New Prague	McEachran, A.....	Minneapolis	Moynihan, T. J.....	St. Paul
Lane, Laura A.....	Faribault	McGaughey, H. F.....	Winona	Muir, Edwin S.....	Winona
				Muir, J. B.....	Roseau

Murdock, A. J. Minneapolis
Murdock, H. G. Taylor's Falls
Murphy, E. F. St. Paul
Murphy, I. J. St. Paul
Murray, D. D. Duluth
Murray, Wm. R. Minneapolis
Musesy, R. D. Rochester
Myers, Thos. St. Paul
Naegeli, Frank. Fergus Falls
Nannestad, J. R. Albert Lea
Nass, H. A. Mabel
Nauth, W. W. Minneapolis
Nelson, C. P. Minneapolis
Nelson, E. H. Chisholm
Nelson, H. E. Crookston
Nelson, H. S. Minneapolis
Nelson, L. A. St. Paul
Nelson, M. S. Spring Grove
Nelson, N. A. Dawson
Neumann, C. A. Lewiston
Neumann, W. H. Lewiston
New, G. B. Rochester
Newhart, Horace. Minneapolis
Newkirk, H. D. Minneapolis
Newman, G. A. Stillwater
Nicholson, Joseph. Brainerd
Nicholson, M. A. Duluth
Nippert, H. T. St. Paul
Nippert, L. A. Minneapolis
Nissen, Henrik Minneapolis
Noonan, D. F. Minneapolis
Nootnagel, C. F. Minneapolis
Nordin, C. G. Brainerd
Nordland, Martin. Robbinsdale
Norman, J. F. Crookston
Norred, C. H. Minneapolis
Novak, E. E. New Prague
Nusbaum, D. H. Jackson
Nye, Katherine A. St. Paul
O'Brien, H. J. St. Paul
O'Connor, J. V. St. Paul
O'Malley, W. P. St. Paul
Oberg, C. M. Minneapolis
Oberg, E. Minneapolis
Ogden, B. H. St. Paul
Ohage, Justus, Jr. St. Paul
O'Hara, J. J. Janesville
Ohlinger, L. B. Rochester
Ohnstad, J. McIntosh
Olander, J. E. St. Paul
Oliver, C. I. Graceville
Olson, S. H. Milaca
Olson, C. A. St. Paul
Olson, F. A. Minneapolis
Olson, G. M. Minneapolis
Olson, O. A. Minneapolis
Olson, O. H. Erskine
Olson, R. G. Nicollet
O'Neill, J. W. Albertville
Onsgard, C. K. Rushford
Onsgard, L. K. Houston
Oppgaard, M. O. Minneapolis
Oredson, O. A. Duluth
Orton, H. N. Minneapolis
Osborn, Lida Mankato
Ostergren, E. W. St. Paul
Otto, H. C. Vergas
Overend, K. V. Kennedy
Owre, Oscar Minneapolis
Palmer, W. L. Albert Lea
Pare, L. T. Duluth
Parker, E. H. Minneapolis
Parker, Owen W. Ely
Parks, Albert H. Minneapolis
Parrott, B. W. Long Prairie
Parsons, F. L. Mountain Iron
Parsons, George E. Elk River
Passer, A. A. Olivia
Patterson, W. E. Currie
Paulson, E. L. Minneapolis
Paulson, Theo. S. Tyler
Payette, C. H. Duluth
Pease, G. R. Redwood Falls
Peck, L. D. Hastings
Pederson, R. M. Minneapolis
Pengelly, E. J. Ironton
Penhall, F. W. Morton
Persons, C. E. Marshall
Perry, C. G. St. Paul
Perry, Ralph St. J. Minneapolis
Pesonen, A. A. Virginia
Peters, R. M. Minneapolis
Peterson, J. R. Minneapolis
Peterson, A. C. Dassel
Peterson, Christian Owatonna
Peterson, Geo. E. Dassel
Peterson, Henry E. Chokio
Peterson, R. A. Vesta

Peterson, T. Minneapolis
Peterson, V. N. St. Paul
Pettit, C. W. Minneapolis
Phelps, R. M. St. Peter
Phillips, J. G. Northfield
Pierce, C. H. Menahga
Pilon, Pierre C. Paynesville
Pinault, H. A. St. Joseph
Pine, A. A. St. Paul
Pineo, W. B. Minneapolis
Piper, M. C. Sanborn
Piper, W. A. Mountain Lake
Platt, J. J. St. Paul
Plehn, J. F. Minneapolis
Plondke, F. J. St. Paul
Plonske, C. J. Minneapolis
Plummer, H. S. Rochester
Plummer, W. A. Rochester
Poehler, F. T. Minneapolis
Poirier, J. A. Forest Lake
Pollock, Lee W. Rochester
Pool, Daniel St. Paul
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Portmann, Wm. C. Jackson
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Pratt, F. J. Minneapolis
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Prim, J. A. Minneapolis
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Puffer, F. L. Bird Island
Putney, George E. Paynesville
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Qulst, Henry W. Minneapolis
Rains, John M. Willmar
Raizer, Franklin. Cloquet
Ramaley, L. St. Paul
Ramsey, W. R. St. Paul
Randall, A. M. Ashby
Randall, B. M. Graceville
Randolph, Wilson. Crookston
Rankin, A. A. Zumbro Falls
Ransom, M. L. Hancock
Ratliffe, J. J. Aitkin
Rathbun, A. M. Rice
Ravn, Bjarne. Milroy
Rebman, E. C. Austin
Rees, S. P. Minneapolis
Reimestad, C. S. Brainerd
Reineke, G. F. New Ulm
Renz, G. A. St. Paul
Reiter, H. W. Shakopee
Rexford, L. A. Minneapolis
Reynolds, J. S. Minneapolis
Rhines, D. C. Caledonia
Rice, Geo. D. St. Cloud
Richards, E. T. F. St. Paul
Richardson, W. E. Slayton
Richardson, W. J. Fairmont
Richmond, Chas. D. Jeffers
Ridgway, Alex. Belgrade
Ridgway, A. M. Annandale
Riggs, C. E. St. Paul
Riley, Wm. H. Minneapolis
Ringnell, C. J. Minneapolis
Rishmiller, J. H. Minneapolis
Risjord, J. N. Fertile
Ritchie, H. P. St. Paul
Rizer, R. I. Minneapolis
Roadman, Ira M. Onamia
Roan, Carl M. Minneapolis
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Roberts, L. M. Little Falls
Roberts, Thos. S. Minneapolis
Roberts, W. B. Minneapolis
Robertson, Archibald W. Litchfield
Robertson, H. E. Minneapolis
Robertson, J. E. Cottonwood
Robertson, W. P. Litchfield
Robilliard, Chas. M. Morristown
Robilliard, W. H. Faribault
Robinson, J. M. Duluth
Robinson, Samuel. Rochester
Robitshek, E. C. Minneapolis
Rochford, W. E. Minneapolis
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Rodgers, C. L. Minneapolis
Rogers, J. T. St. Paul
Rollins, F. H. St. Charles
Rood, D. C. Hibbing
Rose, J. T. Lakefield
Rosen, Samuel Minneapolis
Rosenberry, B. P. Winona
Rosenow, E. C. Rochester
Rosenwald, J. P. Minneapolis
Rothenburg, J. C. Springfield

Rothnem, T. P. Wendell
Rothrock, J. L. St. Paul
Rothschild, H. J. St. Paul
Rousseau, Victor. Maple Lake
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Rowe, O. W. Duluth
Rowe, W. H., Jr. St. James
Roy, Jos. A. St. Paul
Roy, Philemon St. Paul
Rudolf, A. J. Waseca
Rudolf, S. F. Albert Lea
Rumpf, W. H. Faribault
Russell, H. R. Stewartville
Rutledge, J. W. Minneapolis
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Ruud, M. B. Alexandria
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Sanford, J. A. Farmington
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Sawyer, H. P. Goodhue
Schaaf, F. H. K. Hartland
Schaefer, S. Winona
Schatz, F. J. Rosemount
Schefcik, J. F. Minneapolis
Scheldrup, N. H. Minneapolis
Schleselman, J. T. Good Thunder
Schlutz, F. W. Minneapolis
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Schmidt, H. A. Westbrook
Schmidt, Karl H. Minneapolis
Schmitt, A. F. Mankato
Schmitt, S. C. Minneapolis
Schnacke, R. A. St. Paul
Schneider, H. A. Jordan
Schneider, J. P. Minneapolis
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Schoch, R. B. J. St. Paul
Schons, Edw. St. Paul
Schottler, G. J. Dexter
Schroeder, Charles H. Duluth
Schuldt, F. C. St. Paul
Schultz, J. A. Albert Lea
Schulze, Albert G. Duluth
Schulze, George Minneapolis
Schwartz, A. H. Duluth
Schwyzer, Arnold St. Paul
Schwyzer, G. Minneapolis
Scofield, C. L. Benson
Scott, J. W. St. Charles
Seashore, D. E. Duluth
Seashore, Gilbert Minneapolis
Sedgwick, J. P. Minneapolis
Seeley, I. F. Northfield
Seham, M. Minneapolis
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Senkler, Geo. E. St. Paul
Senn, E. W. Owatonna
Serkland, J. C. Rothsay
Sessions, J. C. Minneapolis
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Shapiro, E. Z. Duluth
Shannon, Sylvester Barnum
Shaughnessy, M. J. Wabasha
Shelden, W. D. Rochester
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Sheppard, Fred. Hutchinson
Sheppard, P. E. Hutchinson
Sherman, C. L. Luverne
Sherman, H. T. Monticello
Sherping, O. Th. Fergus Falls
Sherwood, Geo. E. Kimball
Shimonek, Anton St. Paul
Shrader, E. E. Watertown
Shrader, J. S. Springfield
Simison, C. W. Hawley
Simon, Geo. H. St. Paul
Simons, E. V. Spring Valley
Simons, Jalmar. Minneapolis
Simpson, J. D. Minneapolis
Sistrunk, W. E. Rochester
Slivertsen, Ivar. Minneapolis
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Slocumb, H. H. Belgrade
Slocumb, J. A. Plainview
Slocumb, Maude S. Minneapolis
Smallwood, Justin T.
. Worthington
Smersh, Francis M. Owatonna
Smith, A. E. Minneapolis
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Smith, C. E. Jr. St. Paul
Smith, D. Edmund. Minneapolis
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Smith, L. G. Montevideo

Smith, F. L. Eyota
 Smith, H. W. Crookston
 Smith, M. W. Red Wing
 Smith, Norman M. Minneapolis
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 Snyder, G. W. Belle Plaine
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 Stevens, F. A. Lake Elmo
 Stevenson, Robert G. Albert Lea
 Stewart, Allan B. Owatonna
 Stewart, O. E. Brice lyn
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 Stone, Harold Wayzata
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 Strickler, A. F. Sleepy Eye
 Strickler, O. C. New Ulm
 Strobel, W. G. Welcome
 Strout, F. S. Minneapolis
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 Stuart, J. H. Minneapolis
 Sukeforth, L. A. Duluth
 Sundt, Mathias Hanska
 Sutherland, H. N. Ely
 Sutton, C. S. St. Cloud
 Sutton, Geo. E. Rochester
 Sutton, H. E. Cold Spring
 Swanson, Cephas St. Hilare
 Swanson, Roy E. Alexandria
 Swartwood, F. A. Waseca
 Swedenburg, A. W. Gully
 Sweeney, Arthur St. Paul
 Sweetser, H. B. Minneapolis
 Sweitzer, S. E. Minneapolis
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 Taft, J. O. Minneapolis
 Taft, Walter L. Minneapolis
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 Taylor, C. W. Duluth
 Taylor, H. L. St. Paul
 Taylor, Rood Minneapolis
 Taylor, Wm. J. Pipestone
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 Tennyson, Theodore Minneapolis
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 Tharaldsen, Thorfinn Cottonwood
 Theissen, W. N. Faribault
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Thomas, G. E. Minneapolis
 Thomas, Geo. H. Minneapolis
 Thomas, Gilbert J. Minneapolis
 Thompson, Albert St. James
 Thompson, H. H. Minneapolis
 Thordarson, Th. Minneota
 Thornby, H. J. Barnesville
 Thorson, E. O. Luverne
 Tierney, C. M. Granger
 Tilderquist, D. L. Duluth
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 Tingdale, A. C. Minneapolis
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 Todd, F. C. Minneapolis
 Tofte, Josephine B. Pine City
 Torkelson, P. T. Lyle
 Towers, F. E. Minneapolis
 Tufty, J. M. O. Duluth
 Tuohy, E. L. Duluth
 Turnacliff, D. D. St. Paul
 Turnbull, F. M. Duluth
 Tweedy, G. J. Winona
 Tyrrell, C. C. Minneapolis
 Ulrich, Henry L. Minneapolis
 Ulrich, Mabel S. Minneapolis
 Urstad, O. H. Kiester
 Utley, J. D. St. Paul
 Vadheim, Alfred L. Tyler
 Valin, H. D. St. Peter
 Van Deboget, Lewis Minneapolis
 Van Slyke, Charles A. St. Paul
 Van Valkenburg, B. F.
 Long Prairie
 Vercellini, C. E. Duluth
 Vercellini, G. St. Paul
 Verne, V. E. Moorhead
 Vigen, J. G. Fergus Falls
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 Vogel, J. H. New Ulm
 Von Berg, J. P. Albert Lea
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 Walker, J. D. Wykoff
 Waller, Jos. D. Wilmont
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 Wanous, E. Z. Minneapolis
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 Warner, E. F. St. Paul
 Warren, Edmund L. St. Paul
 Warren, F. S. Faribault
 Warren, J. W. Minneapolis
 Warwick, Margaret Minneapolis
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 Watson, A. M. Royalton
 Watson, C. W. Minneapolis
 Watson, F. G. Rushmore
 Watson, J. A. Minneapolis
 Watson, N. M. Red Lake Falls
 Watson, Tolbert Albany
 Wattam, G. S. Warren
 Way, O. F. Clairmont
 Webster, H. E. Duluth
 Weeks, L. C. Detroit
 Weir, J. D. Beardsley
 Weirick, H. R. Hibbing
 Weiser, F. R. Windom
 Weiser, G. B. New Ulm
 Wellcome, J. W. B. Sleepy Eye
 Wentworth, A. J. Mankato
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Wesbrook, F. F. Vancouver, B. C.
 Westby, Nels Madison
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 White, J. S. St. Paul
 White, S. Marx Minneapolis
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 Whitney, A. W. St. Paul
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 Wiedow, Henry Worthington
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 Wilcox, M. Russell Minneapolis
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 Wilkinson, Stella Duluth
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 Williams, C. St. Paul
 Williams, Hugh O. Lake Crystal
 Williams, Leon A. Slayton
 Williams, Robert Minneapolis
 Williams, R. V. Rushford
 Williams, U. G. Minneapolis
 Willis, F. A. Rochester
 Willson, Hugh S. Minneapolis
 Wilson, C. E. Blue Earth
 Wilson, L. B. Rochester
 Wilson, W. Northfield
 Wilson, W. F. Lake City
 Wiltrout, I. Geo. Swanville
 Winberg, O. K. Lake Park
 Winnick, J. B. St. Paul
 Winter, John A. Duluth
 Wippermann, Paul W.
 Minneapolis
 Wiseman, R. L. Pine City
 Witham, C. A. Minneapolis
 Witherstine, H. H. Rochester
 Withrow, M. E.
 International Falls
 Wittich, F. W. Minneapolis
 Wohlrabe, A. A. Mankato
 Wold, K. C. St. Paul
 Wolner, O. H. Gilbert
 Woltmann, H. W. Minneapolis
 Wood, Douglas F. Minneapolis
 Wood, J. R. Hallock
 Woodward, F. R. Minneapolis
 Woodruff, C. W. Chatfield
 Woodward, F. O. Minneapolis
 Woodworth, L. F. Le Sueur Center
 Wooster, A. M. Rockford
 Workman, H. M. Tracy
 Workman, W. G. Tracy
 Wray, W. E. Campbell
 Wright, C. B. Minneapolis
 Wright, C. D. Minneapolis
 Wright, C. O. Luverne
 Wright, F. R. Minneapolis
 Yoerg, O. W. Minneapolis
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 Zaun, J. J. St. Paul
 Zeien, Thos. North Branch
 Zimbeck, R. D. Maynard
 Zimmermann, H. B. St. Paul

OBSERVATIONS ON THE OCCURRENCE OF UROBILINOGEN AND UROBILIN IN THE URINE OF PREGNANT AND NON-PREGNANT WOMEN*

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MINNEAPOLIS

This study was undertaken for the purpose of determining, if possible, whether or not the qualitative estimation of urobilinogen and urobilin in the urine is of diagnostic value.

There are numerous theories concerning the origin of these pigments and the significance of their presence in the blood, intestinal contents, and urine. Some investigators have reported clinical observations in cases of hemorrhage and of increased hemocytolysis, supported by experimental evidence to show that urobilin can be derived directly from blood pigment. Others hold that there is direct formation of urobilin from bilirubin within the liver cells or within the biliary passages. Still other theories are that the renal epithelium reduces bilirubin, since urobilin rarely is found in the blood, or that reduction takes place in the tissue cells of the body and that the pigments are then absorbed into the general circulation and excreted by the kidneys.

The enterohepatogenous theory of Freidrich von Müller is probably most generally accepted, since it is based on the fact that bile pigment excreted into the intestine with the bile is deoxidized by bacteria into urobilinogen and urobilin. Müller assumes that they are then partly re-absorbed into the portal system, and reach the liver parenchyma, which, if it is normal, will break up the major portion, or synthesize it into bile or blood pigment. A small portion may be secreted into the bile, and thence into the intestine to be passed off or re-absorbed. Some of the re-absorbed portion may reach the general circulation, and be excreted by the kidneys.

In cases of pathological changes in the liver, urobilinuria will occur because a large amount of unchanged urobilin is poured into the circulating blood.

Müller and other authors regard even small amounts of urobilinogen or urobilin in the urine as evidence of insufficiency of the liver cells. In support of the intestinal origin of these pigments are the following observations:

1. Urobilin is absent from the urine of the new-born before bacteria have been introduced into the intestinal tract.

2. Urobilin is usually absent from the urine of adults when there is obstruction of the common duct, and re-appears again when the obstruction is removed. Experimentally if the common duct is tied off in dogs, no urobilin appears in the urine, but if bile be introduced into the intestine artificially, urobilinuria occurs.

3. Marked urobilinuria may disappear in severe diarrhea when the bile passes through the intestine too rapidly to be acted upon by bacteria.

4. Urobilinuria occurs when the putrefactive processes of the intestine are exaggerated.

That urobilinuria does not necessarily involve pathological changes in the liver is shown by the fact that, when a large quantity of bile pigment is present in the intestine as a result of increased hemocytolysis, urobilinuria occurs without any demonstrable disease of the liver. This may be due to an increased quantity of unchanged urobilin finding its way past the liver cells into the general circulation and thence to the kidneys. Also where there is known disease of the liver, the excretion of urobilin is subject to great and irregular fluctuations.

Stadelmann claims that, while a definite bile-circulation has been established for bile salts, it is an open question whether there is such a circulation for bile pigments, and he states that there is no definite proof that bile pigments are absorbed from the intestine.

Hooper and Whipple found that dogs with Eck fistulæ formed less bile and less bile pigment than normal dogs, and consequently when obstruction of the common duct occurred there was less jaundice than in the case of normal dogs with obstruction. Also dogs with Eck fistulæ constantly showed traces of urobilin in the urine. These authors found also by careful experiments that bile-pigment formation can be depressed below normal by a protein diet, and raised much above normal by a diet rich in carbohydrates. These observations suggest at least that bile pigment may be formed in part from other substances than hemoglobin, and that bile-pigment formation may depend somewhat on the functional activity of the liver and not solely on hemoglobin destruction. Furthermore, it has been proved by experiment that hemoglobin injected into the pleural

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

and peritoneal cavities and into the blood of dogs whose liver circulation was excluded, is rapidly transformed into bile pigment, proving the theory of extrahepatic derivation. Moreover, urobilinogen and urobilin are present in demonstrable quantities, occasionally in the urine of normal individuals and in patients in whom there is no reason to suspect increased hemocytolysis or damage to the liver. This is especially true in pregnancy as the following observations will show.

Repeated tests for urobilinogen and urobilin were made in the urine of pregnant women, and of non-pregnant women suffering from various diseases, mostly gynecological. Fresh specimens were collected, protected from direct light, and examined in a few hours after collection, as urobilinogen is more or less rapidly reduced to urobilin upon standing in sunlight, and both finally disappear.

For detection of urobilinogen Ehrlich's aldehyde test was used, namely, two parts of paradimethylamidobenzaldehyde to thirty parts of hydrochloric acid and water. A few drops were added to three or four cubic centimeters of urine, and the mixture shaken with chloroform and allowed to stand a few minutes. A rose-pink to wine-red color appearing in the chloroform layer was regarded as a positive reaction. All pale reactions were regarded negative.

For the detection of urobilin, equal parts of urine, previously alkalinized with ammonia, and Schlesinger's solution (saturated solution of zinc acetate in absolute alcohol) were shaken together, allowed to stand a few minutes and filtered. A green fluorescence in the filtrate observed by indirect light was regarded as being due to urobilin.

In reporting the occurrence of these pigments they were regarded as the same, since urobilin is derived from urobilinogen, and while both tests were made in each case the term urobilin is applied to both. Indican tests were made in each case, also assuming that, if increased bacterial processes in the intestine will cause urobilinuria, these might be indicated by the presence of indican in the urine and a parallelism between indicanuria and urobilinuria be found to exist. Record was also made of the patient's hemoglobin, blood-pressure, diseased condition, urine findings, condition of the bowels, and month of gestation.

In all 1,005 examinations were made of the urine of 244 individuals. Of these 160 were pregnant and 84 non-pregnant. The total num-

ber of examinations in the pregnant was 844; in the non-pregnant, 161. Of the pregnant cases 148, or 92.5 per cent, showed urobilinuria at one time or another. Of these there were 33 in whom increased blood-destruction or damage to the liver could not be excluded, leaving 115, or 71.9 per cent, of apparently normal pregnant women whose urine gave positive reactions. Indican was present in 83 cases, or 51.25 per cent; 72 cases showed both indican and urobilin: that is, 48.6 per cent of the cases showing urobilin also showed indican present.

Of the 844 tests made in the pregnant cases 520, or 62.8 per cent, were positive for urobilin and 174, or 20.6 per cent, were positive for indican.

One hundred and forty tests were positive for both indican and urobilin, or 26.4 per cent of the tests positive for urobilin were positive for indican also.

Of the 84 non-pregnant cases urobilin was present in 22 at one time or another. Of these 17 were suffering from diseases which might affect hemocytolysis or the efficiency of the liver. Therefore only 5, or 0.2 per cent, of the non-pregnant showed urobilin. Indican was present in 12 cases, or 14.4 per cent. Twelve cases showed both urobilin and indican. That is, 54.5 per cent of the cases showing urobilin also showed indican, as compared with the pregnant, which was 48.6 per cent.

Of tests positive for urobilin 46.7 per cent were also positive for indican.

Among the pregnant cases urobilinuria was more common in the second and third trimesters than in the first. There was marked variation in the appearance of urobilin, in the same individual, from day to day, ranging from a bright test on one day to none at all on the next and so on. It is also noteworthy that practically all of the pregnant cases were on a low-protein or non-protein diet.

We know that the liver is enlarged during pregnancy, that the metabolic processes are accelerated, and that carbohydrates are rapidly transformed. The total amount of urine excreted is increased. The activity of the blood-forming organs is increased, and the total quantity of blood is augmented.

SUMMARY

1. A total of 1,005 examinations were made for urobilin in the urine of 244 individuals. Of these 160 were pregnant, and 84 non-pregnant.

2. Of the pregnant cases 148, or 92.5 per cent, showed urobilinuria at one time or another. Subtracting those in which increased hemocytolysis or liver disease could not be excluded reduces the number to 115, or 71.9 per cent.

3. Of the non-pregnant cases 22, or 26.2 per cent, had urobilinuria. Seventeen of these had diseases which might produce changes in the liver or blood cells, leaving 5, or 0.2 per cent.

4. In the pregnant indican was present in 83, or 51.25 per cent of cases.

5. In the non-pregnant, indican occurred in 26, or 30.9 per cent.

6. In the pregnant, urobilin and indican were present in 72 cases, indican occurring in 48.6 per cent of the cases in which urobilin was present.

7. In the non-pregnant urobilin and indican were present in 12 cases, indican occurring in 54.5 per cent of the cases in which urobilin was present.

8. Of the 844 tests made of the urine of pregnant cases, 174, or 20.6 per cent, were positive for indican, and 530, or 62.8 per cent, were positive for urobilin.

9. Urobilin and indican were positive 140 times, or 26.4 per cent of tests positive for urobilin were also positive for indican.

10. Of the 161 tests made of the urine of the non-pregnant 34, or 21 per cent, were positive for indican, and 28, or 18.6 per cent, were positive for urobilin.

11. Urobilin and indican were positive 13 times, or 46.7 per cent of tests positive for urobilin were also positive for indican.

12. There are marked variations in the quantity of urobilin excreted from day to day.

13. There is reason to believe that there are important extrahepatic sources of bile pigment.

14. It is possible that urobilin can be derived from other substances than hemoglobin.

15. It is probable that bile-pigment formation is due in part to the functional activity of the liver.

16. Urobilinuria in pregnancy may be physiological, incident to increased metabolic processes in the liver and to heightened activity of the blood-forming and other organs, and possibly to the nature of the diet.

CONCLUSIONS

1. Urobilin can be demonstrated by qualitative tests in the urine of a high percentage of pregnant women (in this series 71.9 per cent) and in a small proportion of the non-pregnant.

It is not justifiable to assume that so large a number of apparently normal individuals are suffering from disease or insufficiency of the liver.

2. Indican is present in a fair proportion of the cases in which urobilinuria occurs—in this study 48.6 per cent in the pregnant and 54.5 per cent of the non-pregnant. In the total number of tests, however, the proportion is less, being 26.4 per cent in the pregnant and 46.7 per cent in the non-pregnant. While the presence of indican may be of importance as an indication of intestinal putrefaction, a parallelism between its occurrence and the presence of urobilin in the urine has not been established by this study.

3. It appears certain that, when such factors as the condition of the portal and general circulation, the eliminative power of the kidneys, the functional activity of the liver, the normal fluctuations in bile and bile-pigment secretion, the integrity of the liver cells, the rate of hemoglobin-destruction, the extrahepatic formation of bile pigment, the condition of the intestinal tract, the diet, and the unknown factors of hemoglobin metabolism, must be considered, the qualitative estimation of urobilin in the urine alone is of little or no diagnostic value.

NOTE.—I am greatly indebted to Dr. F. L. Adair, not only for use of materials and access to case-records, but for help in the translation of literature.

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DISCUSSION

DR. E. L. GARDNER (Minneapolis): Dr. Barnard is to be congratulated on her very careful work and interesting paper. I have had very little experience with the study of urobilinuria of pregnancy, my study having been almost entirely in various medical and surgical conditions.

With our present knowledge of the chemistry of hemoglobin metabolism, we must be very careful about our conclusions. Various links in the chain of our knowledge are filled in by theories and hypotheses. No doubt hemoglobin is one source of the bile pigments, but the relative proportion in which hemoglobin and the food, or other possible origin of the pyrrol nucleus in

the body, may form bile pigments has not been determined.

What is the source of urobilin and urobilinogen in the urine? Dr. Barnard discussed the various theories, but that of von Müller is most widely accepted. Here again are only hypotheses. No one has definitely shown a substance in the portal blood derived from urobilin which is supposed to be derived from the bowel. It is assumed to be absorbed from the intestine and, most likely, from the large bowel, but there is some evidence against this assumption. There is some evidence showing an intrahepatic origin of urobilin.

Hooper and Whipple's recent work using dogs with bile fistulæ is very interesting. Dr. Barnard referred to it. In dogs which were first given a constant diet, any excessive quantity of carbohydrates caused a notable increase, sometimes as much as a hundred per cent, of bilirubin in the bile secretions. On the other hand, a high protein diet caused a marked diminution. The two facts are rather hard to reconcile with the various theories.

Clinically, what is the value of estimating the urobilin and urobilinogen in the urine? Personally, I believe there is little value of studying only the urine. We must study hemoglobin metabolism as a whole. The urine and the stools or, better, the duodenal contents, must be examined. Possibly may occur the normal overflow in the urine. We know the normal urine contains traces of urobilin and urobilinogen. Pearce and Austin and their co-workers have shown a threshold value in the kidney by the intravenous injection of hemoglobin. Small quantities first produce urobilin and urobilinogen in the urine; larger amounts are followed by the excretion of bilirubin with an associated jaundice; and enormous quantities of hemoglobin produce hemoglobinuria.

DR. F. L. ADAIR (Minneapolis): All those who are interested in watching the course of pregnancy I think will be interested in the ultimate finding of a test for hepatic sufficiency. We have of course various tests for estimating the function of the kidneys. We have certain tests which give us an index of toxemia, such as the blood-pressure, albumin in the urine, etc., but we lack any very simple, effective or definite tests which will give us the clue to hepatic insufficiency during pregnancy, and, when we consider that the liver pathology of the so-called toxemias of pregnancy is fully as important as, if not more important than, the renal pathology, you can readily understand the importance of finding a test of this kind.

It is perfectly obvious that this paper deals with no fundamental chemical or physiological problems. It is simply the application of fairly well established tests to the routine examination of the urine in the effort to find out, if possible, whether or not the presence of these bile derivatives, these bile pigments, indicates any abnormal process. So far no definite relationship can be established. The very striking thing is the presence of these pigments in such a large proportion of the pregnancy cases and in such a small proportion of those individuals who are not pregnant. This is rather difficult to explain, but it seems an unwarranted conclusion to draw that the presence of this substance in the urine necessarily indicates any serious interference with liver function. There are many factors which enter into the production of bile, as, for instance, the diet, increased

metabolism in pregnancy, the blood changes which go along with pregnancy, in addition to the actual disease of the liver.

Then the fact that these bile pigments are broken down in the intestine by bacterial action, is not only dependent on the actual presence of bacteria in the intestinal tract, but it can only be supposed it would depend upon the various flora in the intestines, that different varieties of bacteria would have different actions. Consequently, we see that the production of the bile, the breaking down of this antecedent bile pigment in the intestinal tract, might have a very important influence. We also have the factors of altered intra-abdominal pressure and the displacement of organs within the abdominal cavity in association with pregnancy, which might have a very decided influence on not only the rate but the method of absorption. I think Dr. Barnard probably hesitated to put it in her paper, but as a simple hypothesis, not at all well founded or proved, but simply as an illustration of what might happen due to the altered conditions within the abdomen, a greater absorption might take place through the lymphatics than through the blood-stream, and have a decided effect on the elimination of these substances. That is, if they were absorbed by the lymphatics instead of by the portal circulation, they might go more directly into the general blood-stream, and not pass through the liver.

Also, we have to consider the activity of the kidneys,—that is, a small amount of urobilin or urobilinogen in the blood of normal individuals might not be able to pass through the kidneys, whereas in pregnant individuals there might be perhaps a greater permeability of the kidneys for those substances.

The point which I am trying to make is, that there are so many possibilities to explain the more frequent occurrences of these substances in the pregnant than in the non-pregnant individual that we are hardly justified in attributing it to hepatic insufficiency until we have more positive evidence.

DR. J. W. GEORGE (Minneapolis): I have listened to this paper with a great deal of interest because, it seems to me, investigations of this kind must necessarily lead us to some conclusions that will be of great practical benefit in the study of the toxemias of pregnancy.

I wanted to ask Dr. Barnard one question in connection with this, and that is, if in this investigation any of these tests have been made on the same patient while non-pregnant and during pregnancy. The reason I ask that question is this: a great many things are due to idiosyncrasy, if you can call it such, or a tendency on the part of the patient. For instance, in regard to the disturbances in the portal circulation, of insufficiency of the liver or sensitiveness of the liver to various changes in diet and metabolism: individuals differ in that respect, and many times I think that women who have a tendency to disturbances of liver function, may have the tendency greatly aggravated during pregnancy. We know perfectly well that certain women are more subject to toxemias during pregnancy than others, and I should expect that an investigation of this kind would throw some light upon that subject, but I think that an interesting feature would be a series of comparative tests upon the same individual before becoming pregnant and during pregnancy.

DR. L. G. ROWNTREE (Minneapolis): Having worked for some three years on the subject of liver function, I feel impelled to say a word.

I was interested in Dr. Gardner's discussion. His opening remark is of significance because the same attitude was adopted by von Müller and also by von Noorden in the last International Congress of Medicine, which was held in London. They both said that our knowledge of the chemistry of urobilin and the blood-derived pigments is so vague that until it is straightened out we are really at sea as to the interpretation of findings relating to them.

I have made a great many urobilin and urobilinogen studies from the standpoint of liver function. We discarded a report of these findings in our studies of liver function because we felt that the variation of this substance from day to day was very great. I believe, with Wilbur and Addis, that the presence of urobilin or urobilinogen cannot be taken as evidence of decreased liver function unless one has excluded the possibility of increased blood-destruction, which can be done only through a study of these bodies in the stool. Better still would be a study along the line which Dr. Schneider has made.

We have found, after three years' work on the subject, that the factor of safety is so great in the liver that, for practical purposes, it becomes extremely difficult to determine quantitative change of liver function in disease.

On the other hand, I do feel that there are certain tests that show a change in the liver function when it is extreme. For instance, a diminished excretion of phenoltetrochlorophthalein, a decrease in the fibrinogen content, and an increased lipolytic activity of the blood, a decreased tolerance for levulose and galactose, present simultaneously in any case, indicate decreased liver function.

DR. ELIZABETH BARNARD (closing): In answer to Dr. George's question: there was one patient in whom forty-three tests were made, and the last two or three tests were during pregnancy. She had become pregnant in the meantime. The tests were always negative in that case. It was necessary to terminate the pregnancy, and therefore further study was not made. There were three or four cases where tests were made after pregnancy, but the tests were so few that no conclusions could be drawn from them.

SPONTANEOUS OR NON-TRAUMATIC RUPTURE OF THE LEFT KIDNEY*

By GILBERT J. THOMAS, M. D.
MINNEAPOLIS

A search of the literature has revealed few proved cases of spontaneous or non-traumatic rupture of the kidney. A number of such cases are reported following severe muscular strain, etc., some having hematuria and some with perinephritic tumor. Few of these cases were operated on; and there are fewer autopsy reports. That this type of rupture of the kidney is rare is seen when only ten cases of renal injury were reported by Küster¹ among 30,000 cases of disease or injury occurring at the Basle clinic. Herzog² found sixteen cases of spontaneous and one open injury to the kidney in 7,805 autopsies. Many of the text-books mention severe muscular exertion or strain, such as lifting a heavy object, jumping, or a severe pull, as sufficient to rupture a kidney. Watson³ operated on such a case of ruptured hydronephrosis, which occurred in a woman when attempting to pull down a window.

Küster⁴ thinks that the cause of this type of rupture is the hydraulic pressure within the kidney. Another view is, that the distended kidney is thrown against the transverse processes of the vertebræ and ruptured. Von Bergmann⁵, in his text-book, translated by Bull, thinks that the

forces applied press the ribs into the distended kidney. If force is from in front he thinks the injuries are due to contraction of the diaphragm and other muscles. Other forces working tangentially or more slowly, in his opinion, may produce injuries to the organ not to be ascribed to hydraulic pressure. Many cases have been reported of rupture and bleeding due to chronic nephritis. These observations have been borne out by autopsy findings. Wade⁶ reports a case of rupture occurring in a luetic who also had malaria. This individual was treated with mercury, which was thought to be the cause of the acute swelling and final rupture of the kidney. At autopsy an acute nephritis with rupture of both kidneys through their fibrous capsule was found. Speese⁷ reported a case as "perirenal hematuria," which had recurring attacks of pain in the flank. At autopsy a large hematoma was found surrounding the kidney beneath its capsule, together with a rupture. Speese thinks that these cases of spontaneous bleeding are due to a predisposing chronic inflammatory condition and that the bleeding comes from the kidney, and not from the capsule. In his first conclusion he says: "The spontaneous form is probably due to chronic nephritis, the only pathology which has been

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

demonstrated." He collected twenty-one cases of this type. Wade, in 1915, including the cases previously collected by Speese, could find only thirty cases reported in the literature.

Wade's summary is as follows:

1. Spontaneous rupture of the kidney may occur in acute parenchymatous nephritis due solely to the extent and rapidity of the swelling of the organ. It is a condition of extreme rarity and the present case is, as far as can be determined, the second to be reported in which bilateral rupture of this type was found.

2. Such rupture apparently may occur with or without perirenal hemorrhage of sufficient degree to present symptoms. When due solely to the rapid swelling of the parenchyma and edema of the interstitial tissue, compression of the cortical capillaries may prevent extensive hemorrhage.

3. The fatal acute nephritis in the case presented was probably due to the combined circumstances of antisyphilitic treatment given a patient with acute nephritis, chronic malaria, and an acute parenchymatous nephritis. Microscopically, many of the parenchymal cells present an unusually extensive accumulation of "colloid" globules, the nature of which is not thoroughly understood, though probably they are degenerative products and are related to bodies found in other degenerative conditions.

I have seen many cases with symptoms of acute pain after heavy lifting, etc., sometimes followed by tumor-formation or hematuria, or both. If the patients are confined to the bed without surgical interference, many of these cases clear up. It is necessary, however, to make sure, as soon as examination can be made, that the rupture was not due to some pathological condition in the kidney, which might be an etiologic factor. The majority of the cases reported in which operation or autopsy was made had some pathologic condition which made spontaneous rupture easy. I was not able to find a proved case of spontaneous rupture in a healthy kidney. The cases reported which were not operated on or were not examined at autopsy contain no history of previous illnesses, infection, previous condition of the urine, etc., so that the condition of the kidneys is not known. No reports are given of cystoscopy or of roentgenologic examinations after the onset of symptoms, so that the rôle that gross pathologic lesions of the kidney may play as a predisposing factor has not been ascertained. The mode of production of these lesions after slight muscular strain is not clear unless we accept the theory that the

kidney contained some pathological process previous to the onset of symptoms of rupture.

CASE 156,050 (reported from the Mayo Clinic).—Patient, male, aged 65. Examined March 29, 1916. Resident of Olmsted County for the last twenty years, and of Rochester for five years.

Previous history: Dyspeptic attacks as a boy for several years, but no such attack for the last fifteen years. About twenty years prior to examination had indefinite pain in the left upper abdomen. Consulted a physician, who thought the trouble due to rheumatism. No treatment or examination at this time. The patient has never had an accident nor an injury that he can remember. Eleven years ago he had a severe attack of pneumonia, and complained of pain in the left loin.

Present complaint: Patient was seized about five o'clock in the morning with intense, severe pain in the left loin which was preceded by an attack of coughing and a gagging sensation in his throat. Pain continued for about two and one-half hours, and was accompanied by vomiting. At the first urination after the onset of pain the patient noticed that his urine contained bright-red blood. His local physician was called three hours after onset, who discovered a very large tumor in the left upper abdomen with marked tenderness. The urine, which had been saved, showed a quantity of macroscopic blood. The patient was brought to the Mayo Clinic by the family physician with a diagnosis of ureteral stone.

Physical examination: A complete physical examination was not possible because of the difficulty in moving the patient about. His breathing was difficult and rapid because of the intense pain on inspiration. He looked somewhat anemic, and had the appearance of a patient in shock. A large, tense mass was palpable in the left hypochondrium, which extended downward two or three finger-breadths below the navel and to the right of the midline. This was so tender that it was impossible to examine thoroughly. The heart action was good, but rapid. We were unable to examine the lungs.

Morphine was administered and an ice-bag was applied to the side, and the patient soon became comfortable. The temperature, taken three hours after the onset, was 101° with pulse 110. The following morning after a good rest and freedom from pain the pulse was 95, and the temperature was practically normal. The rigidity had greatly decreased, as had the size of the tumor. We were unable, however, to feel the kidney. Because of the patient's temporary recovery we did not think it necessary to explore the kidney at once. The evening of the third day the temperature was 100.4° and the pulse between 90 and 100. The urine did not contain macroscopic blood after the first day, but a quantity of microscopic blood was found at several examinations. Functional test was 59 per cent (phenol-sulphonephthalein).

We were able to make a radiogram on the fourth morning, which demonstrated several large shadows over the left renal area. The patient's general condition was good, although his temperature on the sixth morning was 100° with pulse 84.

The acute onset having subsided and the shadow indicating probable previous pathology in the kidney, we thought it best to explore. The clinical diagnosis was ruptured kidney secondary to multiple stones with hydro- or pyo-nephrosis. It is to be noted that there was no recurrence of the bleeding or of pain even after a

cathartic, and the movement necessary for a Röntgen examination.

Treatment: Nephrectomy was made by Dr. E. S. Judd. A very large hematoma was found which contained numerous stones. The kidney was ruptured in at least one area, which was found on the anterior surface near the lower pole. After the large clots and stones were removed no bleeding point was discovered. The kidney was somewhat adherent, so that its removal was difficult. When the kidney was first manipulated, blood was seen coming from its pedicle. This was found to be arterial blood, and the bleeding point was a good two inches from the kidney. After being dissected out of its many adhesions, the kidney was found to be hydronephrotic. There were still many stones in a functionless sac, which also contained some fluid. The patient withstood the operation well, and his convalescence was uneventful.

We cannot explain the rupture of one of the renal vessels, although it was noted that the kidney was displaced somewhat toward the mid-line, due to the large hematoma. The sac was ruptured in at least one place which could have accounted for the hematuria. It was evident that at some point there must have been bleeding into the pelvis because immediately following the onset gross blood was found in the urine. It is probable that rupture of the renal vessel was secondary to displacement. Aneurysm was thought of, but was not found. The previous history was carefully gone over, and absolutely no record of trauma was obtained except a slight fall from a hay-rack several years before, which would

not account for the present condition. This man had been remarkably free from illness in the past fifteen years. His urinary history was absolutely negative.

The points to be emphasized from this case are the following:

1. A rupture in a pathological kidney may occur without trauma.
2. A functionless kidney may frequently not cause symptoms when the other kidney is sound.
3. Formation of stones in a kidney may be symptomless.
4. Nephrectomy seems the only treatment possible in this type of case. The patient should be closely watched, and the time of operation should be carefully selected.
5. Spontaneous rupture of a kidney probably does not occur without antecedent pathological change.

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THE VALUE OF FUNDUS EXAMINATION IN GENERAL DIAGNOSIS*

By M. E. TRAINOR, M. D.

WILLISTON, NORTH DAKOTA

The ophthalmoscope is used on a tissue that is different from all other organs of the body in that it is transparent. Here can be observed currents of living blood circulating within the vessels, also the secret processes of disease and repair. Within the deep recesses of the eye, we may see hemorrhages and exudates appear and disappear, blood-vessels pass through the varied stages of degeneration, and neoplasms develop, the persistence of which will destroy life. It is unfortunate that these open secrets should be hidden from any practitioner of medicine, particularly as the presence of many insidious diseases is manifest early in the eye, and frequently the first intimation that nephritis, arteriosclerosis, or

grave disease of the nervous system is present, comes through an ophthalmoscopic examination.

To use the ophthalmoscope successfully is a simple mechanical procedure, the attendant difficulties of which have been overrated. The fault with all beginners in ophthalmoscopy is haste. As a matter of fact, no method of physical diagnosis is more readily acquired, provided each simple manœuvre is mastered in proper sequence.

In order that we may recognize diseased conditions of the fundus, it is necessary to know the normal fundus. The disc represents the entrance of the optic nerve, and is much lighter in color than the rest of the fundus. It is separated from the adjacent portions by a sharply defined margin, and has a funnel-shaped center, formed by

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

the separation of nerve fibers. At the bottom of the funnel may be seen some spots, which represent the lamina cribrosa, through which pass the fibers of the optic nerve. The blood-vessels are the central artery and the central vein, and their branches. The veins are of greater thickness, darker in color, and more tortuous. The arteries are easily distinguished from the veins as they are lighter in color and run a straighter course. Sometimes we find that there is a pulsation in the veins, which is increased by pressure and regarded as physiological, while, on the other hand, pulsation in the arteries is pathological. The retina is transparent. The color of the background is derived from the choroidal vessels, and is modified by the pigment of the retina, being lighter or darker, according to the complexion of the patient. The macula which is the most highly developed part of the retina, and in the line of direct vision, is somewhat darker than the surrounding retina, and is devoid of visible blood-vessels.

As I find that my subject is altogether too big for the time limit, I have confined myself to a short discussion of what I consider the most important diagnosis that can be made with the ophthalmoscope, namely, arteriosclerosis, albuminuric retinitis, papillo-edema, and miliary tuberculosis.

First, arteriosclerosis is first manifested by the ophthalmoscope in that the retinal vessels become dilated and tortuous, and they are seen to pulsate, particularly at the curves, by a lateral displacement of the whole artery. Locomotion pulse occurs in all angiosclerosis in which the arteries are primarily affected, but as it causes no disturbance of vision it is seldom seen by the ophthalmologist.

In the early stage of typical retinal arteriosclerosis the veins are unchanged, and, as a rule, are less tortuous and no broader than the arteries. No age is exempt from arteriosclerosis, but it is rare in infancy. The most important factor, however, is heredity, manifested in certain families by a tendency to vascular degeneration from slight causes and by premature senility. In many cases the blood-pressure is subnormal in the stage of arterial relaxation and dilatation, but later in the diseases when the arteries grow rigid the blood-pressure will be increased. The prognosis depends very highly on the amount of destruction which has taken place when the disease is discovered. The process is progressive, and to all practical purposes cannot be stopped; but, if an early diagnosis is made, the patient can by a

careful regulation of his diet and mode of living be carried on close to the end of his usefulness.

Of all inflammations of the retina, retinitis albuminurica is the one best characterized. In addition to the general signs of retinitis, such as haziness of the retina and of the outline of the disc, and distention of the retinal arteries and hemorrhages, it is particularly distinguished by the white patches in the fundus. These white spots are found usually in two places; first, in the macula, in which all distinct vision is lost; and, second, in a certain part surrounding the disc.

Although the fundamental cause of a disease of the retina can be determined positively only by the examination of the entire organism, we must not content ourselves with this, but must study closely the changes in the fundus. This we should do for several reasons. Each disease is of interest; and physical knowledge is the guiding star to our science. We also gain important matter for our prognosis.

The time is certainly past when we believed that a disease of the kidneys causes a retinitis albuminurica, a diabetes, a retinitis diabetica, etc. All of these so-called forms of retinitis are nothing else than the ophthalmoscopic impressions of injuries to the tissue and disturbances of the circulation in the retina, and yet we are justified in asking for the ophthalmoscopic findings that we may be better able to draw conclusions regarding the progress of the disease.

The patients complain of a cloud before their eyes; and this disturbance is always present in both eyes, although it may be more marked in one eye than the other. One consolation is that the patient usually retains enough vision to get around by himself.

Clinical experience has proved that white spots can appear in a great many diseases, a few of which are poisoning with phosphorus or quinine, diseases of the liver, carcinoma of the stomach, and hydrocephalus internus. White spots of degeneration are met with in sepsis, syphilis, and in diseases of the blood, like anemia. This versatility in the occurrence of such spots in the retina is due to the fact that the tissues of the eye are very delicate, and respond to circulatory disturbances very readily. As soon as the physician discovers white spots in the retina he must not content himself with the examination of the eye, but must investigate every organ with special reference to the composition of the blood and the presence of albumin and sugar in the urine. Numerous statistics have shown that death is to be expected within one or two years

after the appearance of these albuminuric spots in the retina. It is only in exceptional cases and under favorable conditions that the patients live longer than this, and therefore it becomes the duty of the physician to acquaint the family with this fact as soon as the diagnosis is made.

Papillo-edema, or choked disc, is the third condition which I think is of great importance in making a diagnosis, particularly in the diagnosis of brain tumor. In order to show that a number of cases go unrecognized I wish to report two cases which I have had in the last nine months:

CASE 1.—The patient, aged 32, came to me complaining of headaches, which were so severe at times as to drive her almost insane. She had been operated on a couple of times for uterine trouble, and had obtained no relief. Her idea when coming to me was to see if her glasses were properly fitted. She was well nourished, and her family history was negative as to syphilis and tuberculosis. Her glasses were just right, and there was no muscle imbalance. There were unmistakable signs of swelling of the disc, and the veins were very large and tortuous. The arteries were small. I referred her to a neurologist where a decompression operation revealed a sarcoma of the left temporal lobe. The patient was entirely relieved from her headaches by the operation, and is still enjoying good health.

CASE 2.—Woman, aged 47, came to me complaining of headaches, and asked that I refract her for glasses. There were practically no signs of eye-strain, but edema of the disc; and the veins were in such a condition as to satisfy me as to the presence of some intracranial pressure. This woman was also referred to a neurologist, but the pressure had become so rapidly worse that no operation was done, and the patient died. No post-mortem was allowed, but the diagnosis was confirmed by one of the best neurologists in Minneapolis.

In this disease we find the retinal blood-vessels considerably altered, the arteries being thinner, while the veins are distended. This is due to the compression of the vessels by the optic nerve. The retinal veins are exceedingly tortuous, the deeper portions being obscured by the haziness of the issues. The most important symptom is the swelling of the papilla, shown by its projecting above the surrounding retina.

Like the rest of the intra-ocular affections, neuritis is but rarely a local lesion. On the contrary, it usually originates in some deep-seated affection, and for this reason is almost always bilateral in its development. The diagnosis of neuritis is therefore of importance, not only to the oculist, but for every physician engaged in the treatment of internal disorders.

Brain diseases, as stated before, are by far the most frequent cause of papillo-edema. The brain lesion leads to affection of the optic nerve either through producing congestion or through transfer of inflammations. A brain tumor, as a result of its growth, takes more and more space

to itself within the cranial cavity. Hence, as the skull is unyielding, an increase of the intracranial pressure arises, by virtue of which a portion of the cerebrospinal fluid is squeezed out of the cranial cavity, some of which is forced in the direction of the spinal cord, and some more in the direction of the optic nerve.

Neuritis having this origin is not so much of an inflammation as an edema, and is designated as congestive neuritis or choked disc. Direct transmission of inflammation from the brain to the optic nerve must be assumed to exist chiefly in those cases where inflammation actually exists, such as tubercular meningitis or in cases of otitic origin. Syphilis is a frequent cause of neuritis, the optic nerve often being attacked by the syphilitic affection directly.

Choked disc is also brought about by acute infections, disturbances of nutrition, acute anemia, great loss of blood, and orbital injuries and affections.

The fourth and last condition that I wish to discuss at this time is tubercular retinochoroiditis. In this condition the ophthalmoscopic findings are not as clear-cut as in many other diseases, but they should not be overlooked, for oftentimes a patient may be lost or saved by these same findings. The patient may come complaining of some haziness of vision and some irritation. The examination discloses the vitreous cloudy and filled with floating opacities, which give the fundus a darkened appearance, through which may be seen some white spots. The retinal vessels are normal.

Tuberculosis has long been regarded as a probable cause of obscure cases of choroiditis, but only since the employment of tuberculin in diagnosis has it been demonstrated that the proportionate number of tuberculous cases is large. It is possible, too, that not a few cases of disseminated choroiditis, especially in young persons, are a kind of attenuated tuberculosis of the choroid, although a sure proof of this has not been attained. According to some men miliary tuberculosis of the choroid may occur in any stage or kind of tuberculosis, and it is common in chronic tuberculosis.

It is generally manifested by a small exudate which is found near the optic nerve or the macula and which ultimately becomes absorbed leaving an atrophic pigmented patch in the choroid. Sometimes the extra-ocular tuberculous foci that caused the lesion are absent, so that the eye condition becomes of diagnostic value in that it points to the existence of latent tuberculosis.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

FEBRUARY 1, 1917

WHAT IS BIRTH-CONTROL?

The newspapers have frequently been printing items on the matter of birth-control. The propaganda seems to have its center in the East, although doubtless it has many agencies and branch committees in various parts of the United States. The promoters of this effort to control births have established clinics in various parts of New York and Brooklyn, but they have had to work very quietly, because a promoter of the effort has been arrested for attempting to instruct people in the prevention of child-bearing. In New York the matter has evidently attained such prominence that the New York Medical Society, by a large majority, condemned the movement as being both unwise and unnecessary.

It has been very difficult to get at the details of what is meant by birth-control, but it is said that a pamphlet published on the subject gives several different methods of preventing conception. Whether the instructors at the clinics are simply making a legitimate effort to instruct women as to the number of children they should have, that is, for their good and the good of the country, is a question; but, if they are telling women some definite means of preventing conception, then the movement has gone beyond

the normal and legitimate laws of nature. Of course, too, it is presumed, although not known to medical men, that some mechanical appliance has been advocated, or that douching and other such means have been the principal suggestions of the instructors. At all events, the subject is too weighty a one to pass by very lightly.

It is quite true that there are a number of poor families who have too many children, who are unable to bring them up properly and to educate them later; and then, too, there are the large classes of feeble-minded people who make no effort to control themselves in any way; and to them are born large numbers of children who are more or less deficient. It would be proper if this class of people could be regulated, and if the birth of children from the feeble-minded class could be controlled in some way; but is it fair or reasonable to assume that the country in general is bringing forth too many children? They are eventually to become the life of the nation in the future, and on them may rest the development of the country. It is not a crime or even a drawback for a child to be born of poor parents, perhaps of uneducated parents, because, later, that child may have opportunities which bring out the best of our educational methods, our methods of training and of the development of the child as a whole. Perhaps the majority of the great men of the times, men who are big in the life of corporations and finance and other business fields, have risen from this very type of people, that is, people who are poor, uneducated, and unrefined, and yet their sons and daughters have succeeded where their parents failed. Then, too, there is a large mixture of races which America is responsible for, because of the alien types who come to this country and marry and intermarry with various other races. These children are ultimately destined to become the framework of the United States, and who is able to judge whether birth-control should be established among this class of people?

It would be interesting to get hold of one of the pamphlets that are issued by this clinic to see whether these people are doing constructive or destructive work. This effort of birth-control is more or less related to polygamy. It has been so found in European countries, where the birth-rate has gone down tremendously and has risen only by polygamous methods, the offspring being legitimated by the State.

If these instructors and reformers of the birth-rate would confine their work to certain types of

people it might be a very great advantage and particularly if they protect the feeble-minded woman from bringing a feeble-minded child into the world, and when we speak of feeble-minded, it applies to all grades, from the mildest to the most pronounced type. There are too many such people in the world. There are too many people who are unable to think, and consequently become a burden upon the community, and, if birth-control could be regulated among them, the promoters would be attaining a proper end; but, unfortunately, this class of people are not always interested in the subject, and the regulation of copulation cannot be attained in any definite way by simply gathering a class of women together and telling them what they ought to do and what they ought not to do.

The fundamental idea that these reformers have in mind is the quality of the race. They claim to increase the efficiency of the child, to make it a better and a more likely offspring rather than to permit the quantity of children to predominate. Looking over our farming communities and our small towns and villages, doctors not infrequently come across a family history where there are from ten to twenty-four children born to the parents, and the probability is that the majority of these children are strong, healthy, and able to increase their kind when they marry. These people are not subject to birth-control. They are the backbone of the country, and the children are usually of the sturdy and well-developed and healthy type. Perhaps in the cities it may be wise to exercise some supervision over the birth-rate, but how it can be done wisely and legitimately and without creating secret vice, is something that we doctors would like to know about.

CLINICAL OPPORTUNITIES OFFERED

The Hennepin County Society has formed an admirable plan for extending the privileges of all Minneapolis clinics to visiting physicians. The plan is to post daily on a bulletin-board the clinics in the city open to all physicians, giving the necessary details as to the time, place, and character of such clinics, and giving the information as far in advance as conditions permit. This does not mean an invitation simply to general clinics. It means that and much more: it means an invitation to all the private clinics of

special interest so far as physicians can extend such an invitation.

In short, the plan is to open up so many clinics that physicians visiting the city for a day, a week, or a month, will have an opportunity to see work done in which they are vitally interested.

The method of giving the necessary preliminary information has been admirably planned. A bulletin-board has been placed in the hall of the Society on the upper floor of the Donaldson Medical Building, at the corner of Nicollet avenue and Seventh street. It will be accessible at all hours, day and night; and the visitor will be directed to it by any of the elevator men of the building. Postings will be made on it late in the afternoon and early in the morning, so that physicians can consult it on the evening before, or early in the morning of, the day visits are to be made, and thus decide what clinic they wish to visit. The clinics will be both medical and surgical.

It is hoped that the Ramsey County Society will adopt a like plan, and thus give physicians visiting the Twin Cities an opportunity, whenever in either city, to spend a brief or a long time in clinics of their choice. Such a plan will be equally helpful to the casual visitor and to the man who comes to do serious postgraduate work.

The complete and permanent success of the plan, of course, will depend upon the kind of reception it receives from visiting physicians.

Any further information desired can be obtained by writing the secretary of the Hennepin County Society or, in fact, any member of the Society.

THE COMMON SCOLD

The "common scold," as defined in the Standard Dictionary, is of the female gender; but, of course, the dictionary defines words according to their root meanings or to their use in good society of the day, necessarily the past day. This is sometimes done quite regardless of an imminent or of an accomplished change in the vernacular of today.

The common scold was dealt with, in the past, even by our good Puritan ancestors, with a severity that, thank fortune, is no longer tolerated. This change in severity of punishment may be due, in part or in whole, to the fact that the gender, the sex, or the term, has changed; but, we fear, public abhorrence of "it" (neuter gender) has not abated.

Do our exclamatory reservations, embodied in

"thank fortune" and "we fear," foreshadow our confession? Whether they do or not, the truth must be told: the common scolds of today are the editors of our state medical journals, with alternates in the secretaries of our state medical associations. As the secretaries talk less in public than the editors, they may not have received from the medical profession their just deserts.

But this is not the question we are to discuss on this occasion: we propose to defend the editor who has the courage to do his duty, which is to tread in paths that no man can follow without being ignominiously designated a common scold. Of course, we resolved on January 1, 1917, never to scold again. The same resolution has been made on the first day of every year since we have been at the front; but this resolution cannot be kept by a man overburdened with a sense of duty, as is every editor of a state medical journal.

Possibly the reader—"my gentle reader"—is now asking, what is the cause that inevitably makes the editor of a medical journal a common scold? My gentle reader, you do not know how easy the answer is! The reason is *you*. The editor of the *Ohio State Medical Journal*, even in his paper of January 1, the day of good resolutions, upbraids *you* for not paying your 1917 dues, and thus maintain your membership in your county society and state association, your right to defense in the malpractice suit that may be started during your lapse, and all other rights that pertain to membership in a medical society. This is all said—and, no doubt, said again and again—in your interest, but it is said at the risk of being himself denominated a common scold.

You force every editor to say the same thing; but all medical editors, we fear, do not say it so humbly, so apologetically. As a preface to what we are now compelled to say, we borrow our Michigan brother's language, for it expresses our feelings exactly: "We do not like to be nasty about it,—" but some of you have not paid your 1917 dues, and your state secretary, if not your moribund county secretary, is scolding about it even harder than we possibly can. Your failure is like a monkey-wrench in the gearing. It hurts you; it hurts your society; it hurts the profession; it hurts the beneficent cause in which the profession is engaged. Does it make you feel good? If so, we do not understand your "pathology." If not, why do you fail,—many of you lapse every year for a short time? Answers to this query will be cheerfully received and pub-

lished, and even retraction will be made if an excuse can be found upon which to base a retraction.

Now, while we have you on the spit, we shall turn that instrument of torture, in the hope that it may become one of reform, and ask you why you will not promptly return, with your corrections, the manuscript of your discussions on papers read before your state medical association.

The importance of this revision is amply demonstrated by the fact that one-half the discussion thus sent out is entirely rewritten by its authors, and the other half is very materially changed, which shows that very little of it is suitable for printing in the form in which it comes to us, even though it be a verbatim report of the discussion.

If part of the discussion on any paper is not returned, either the publication of the paper is delayed or the unrevised discussion must be used or omitted. This is an almost unendurable condition, but—"we do not like to be nasty about it."

If the unkindness and the injustice to others are not plain in the delay and failure set forth herein, we cannot emphasize them by becoming a "common scold" *all the time*, and yet we do not want to overwork our alternates, the secretaries of the associations we represent.

REPORTS OF SOCIETIES

MINNESOTA ACADEMY OF MEDICINE

The Society held a stated monthly meeting on January 8, with twenty-eight members and three visitors present.

While the election was going on, reports of cases were made by Drs. Wilcox and Mann.

Dr. Wilcox related his experience with three cases of fracture. The first patient fractured the lower third of the tibia and the middle third of the fibula, three months after a complete break of the middle third of the same tibia and without disturbing the original fracture. The second individual broke his thigh transversely in the middle third. It could not be reduced by the usual methods. Through an incision, a Parham band was applied with perfect apposition and apparent union. The third case was that of an old ununited fracture, operated on five years ago. It was of the compound variety, and had been treated with a Lane plate. The wound healed readily, and recovery seemed perfect.

For more than two years, the patient, who was a millwright helper, followed his occupation. At the end of that time there began to be preternatural mobility at the site of fracture, with accompanying deformity of the arm. He continued, however, to use the flail-like member up to the present time. A radiograph shows the Lane plate to be broken and the bone ununited.

That the man was able to do his work with nothing holding the separated bones in place but the plate, is remarkable, as well as interesting. X-ray plates of all three cases were shown.

Dr. Mann reported the case of a boy who broke his arm six weeks ago, and again within the last few days. The second fracture was not at the same point, but fully an inch away from the original break.

Dr. Farr exhibited a fracture-forceps of his own devising with which he gave demonstrations of its practicability on a femur.

The first paper of the evening was read by Dr. Edward Evans, of LaCrosse, Wis., on "The Hospital—a Social Problem." The paper was discussed by Dr. Moore.

The other paper of the evening was by Dr. Arnold Schwyzer on the surgery of the larynx. Several entered into the discussion of the subject following its presentation.

Drs. A. C. Strachauer and E. J. Huenekens, of Minneapolis, were elected to membership.

F. E. LEAVITT, M. D.
Secretary.

WINONA COUNTY SOCIETY

The Society held its annual meeting at Winona on January 9, with a small attendance. No papers were read, the meeting being given over to business.

Officers were elected as follows: President Dr. W. V. Lindsay, Winona; vice-president, Dr. F. H. Clay, St. Charles; secretary, Dr. H. F. McGaughey, Winona; delegate, Dr. E. S. Muir, Winona; alternate, Dr. E. M. McLaughlin, Winona.

O. MASON RANDALL, M. D.
Secretary.

PARK REGION DISTRICT AND COUNTY SOCIETY

The Society met at Fergus Falls on January 10, with 16 members present.

Dr. W. W. Drought reported a case of habitual abortion, which was discussed by Dr. O. Th. Sherping. Dr. A. C. Baker read a paper on "Diagnosis of Diseased Conditions of the Stom-

ach and Duodenum," which was discussed by Dr. A. D. Haskell.

Officers were elected as follows: President, Dr. J. L. Berthold, Perham; vice-president, Dr. C. W. Meestroth, Brandon; secretary-treasurer, Dr. A. Mason Randall, Ashby; delegate, Dr. O. Mason Randall; alternate, Dr. J. G. Vigen. Five new members were elected.

H. T. McGUIGAN, M. D.
Secretary.

NEWS ITEMS

The new hospital at Barnesville was opened January 4.

Dr. R. E. Spinks is leaving Remer to locate in Middle River.

Plans are being made to give Huron, S. D., a new hospital.

Dr. Ray D. Gardner, of Eveleth, has moved to West Concord.

Dr. E. J. Hagen, of Williston, N. D., has moved to Evanston, Ill.

Dr. C. A. Manahan, formerly of Brownsdale, is now located in Marengo, Iowa.

Dr. H. E. Sutton, of Cold Spring, is to spend about three months in Germany.

Dr. E. G. Sasse, of Lidgerwood, N. D., was appointed city physician last week.

Dr. F. W. Freyberg was re-appointed county physician at Aberdeen, S. D., last month.

Dr. T. N. Yeomans, of Minot, N. D., was re-appointed county physician at that place last month.

Dr. Gilbert Seashore, of Minneapolis, was married last week to Miss Signa W. Blomquist, of Minneapolis.

Itasca County is to have a county hospital. John D. Bach, an architect of Superior, Wis., is drawing the plans.

The new Kotana Society of Montana and North Dakota held its first annual meeting last month at Williston, N. D.

Dr. Stephen Olney, of Sioux Falls, S. D., died last month at the age of 70. He began practicing in Sioux Falls in 1877.

Lake City's new hospital was opened on January 1. It is modern and well-appointed, and will accommodate twenty patients.

The South St. Paul Anti-Tuberculosis Society

has made the first move towards the erection of a \$35,000 tuberculosis hospital for Dakota County.

Dr. George W. Snyder, of Belle Plaine, a University graduate (class of 1912), was married last month to Miss Agnes Victoria Rast, of Chaska.

Dr. John W. Lenfest, of Ambrose, N. D., died early in January at the age of 38. Dr. Lenfest was graduated from the University of Minnesota in 1903.

The training-school of the West Side General Hospital of St. Paul graduated its first class of nurses last month. There were five members in the graduating class.

The State Nurses' Association of South Dakota held a meeting on January 8 and 9 in Pierre, and took steps to obtain a bill for state registration of nurses.

There were reported in 1916 in Minnesota 906 cases of poliomyelitis, with 104 deaths. Minneapolis had 121 cases and 9 deaths; and St. Paul had 80 cases and 8 deaths.

St. Luke's Hospital building at Spokane, Washington, was destroyed by fire on the night of January 21. It contained nearly a hundred patients, all of whom were saved.

Eleven graduate children's nurses received their diplomas from the Children's Home Society of St. Paul at the graduation exercises of the institution held on January 18.

Dr. R. G. Depuy, of Jamestown, N. D., was appointed county physician last month at a salary of \$1,000; and Dr. P. G. Artz, of Jamestown, was appointed superintendent of the County Board of Health.

At the annual meeting of the Minnesota State Board of Health, held last month, Dr. W. A. Jones, of Minneapolis, was re-elected president; Dr. Christopher Graham, of Rochester, was re-elected vice-president.

A general and cordial invitation is extended to physicians to attend the Congress on Medical Education, Public Health, and Medical Licensure, to be held on February 5 and 6 at the Congress Hotel, in Chicago.

Dr. Elmer V. Eyman, of the staff of the State Hospital for Insane at Yankton, has moved to Madison, S. D., to take up general practice. Dr. M. L. Stiffler, of Denver, Colo., takes Dr. Eyman's position on the hospital staff.

St. Barnabas Hospital of Minneapolis has re-

ceived a gift of \$107,500 from Mr. and Mrs. Erwin C. Whitney, of Ottawa, Canada, former residents of Minneapolis. The money will be used to erect an administration building.

We make in this issue editorial notice of a new plan of the Hennepin County Society to inform physicians visiting Minneapolis of the special clinics open to them from day to day, with the time and place such clinics are held.

Dr. L. C. Mead, superintendent of the South Dakota State Hospital for Insane, and Dr. R. E. Woodworth, superintendent of the State Sanitarium for Tuberculosis, received high commendation in Governor Norbeck's address to the legislature of that state.

Dr. Philip Skrainka, for the past six years literary editor of the *Interstate Medical Journal*, of St. Louis, has resigned from that position; and he begins this month the publication of a new journal called *Medicine and Surgery*, with offices at 608 Metropolitan Building, St. Louis, Mo.

The first prisoner arraigned in Grand Forks, N. D., in 1917, was a man charged with practicing medicine without a license. He was fined \$50, in default of which he went to jail for 30 days. Was not the absence of the control of \$50 *prima-facie* evidence that the prisoner was a physician?

The Nicollet-Le Sueur County Society held its annual meeting at Le Sueur on January 9. Officers were elected as follows: President, Dr. C. C. Blakeley, St. Peter; vice-president, Dr. L. F. Woodworth, Le Sueur Center; secretary, Dr. J. E. LeClerc, Le Sueur; treasurer, Dr. D. W. McDougall, Le Sueur.

The Grand Forks District Society of North Dakota held its annual meeting in Grand Forks on January 11. Officers for the current year were elected as follows: President, Dr. Thos. Mulligan; vice-president, Dr. W. H. Witherstine; treasurer, Dr. C. S. Marsden; secretary, Dr. H. J. Friesen; delegate, Dr. H. G. Woutat.

REMOVAL NOTICE

Drs. W. A. Jones, A. S. Hamilton, A. W. Morrison, and F. P. Moersch have moved from the Pillsbury Building to the Physicians and Surgeon's Building (corner of Nicollet Avenue and Ninth Street), suite 406, Telephones: N. W.-Main 668; Tri-State, 31 887.

Dr. Herbert W. Jones remains in the old offices. Telephones: N. W.-Nicollet 637; Tri-State, 31 222.

PRACTICE FOR SALE

A \$5,000 practice for sale in a town of 500 in South Dakota. Here is a good opportunity for the right man. Address C. Estile, 610 East 7th Avenue, Mitchell, S. D.

PHYSICIAN WANTED

In a live town, 90 miles from Twin Cities; fine country; no other doctor. Fine chance for a good, young physician. The Commercial club will back the right man. Address 454, care of this office.

LOCUM TENENS WANTED

A physician registered in Minnesota, to fill a vacancy of assistant for eight weeks, beginning at once. Small mining town, in Northern Minnesota. Hospital in connection. Address 444, care of this office.

PHYSICIAN WANTED

A doctor, young or middle aged, at Henry, S. D. Population, 500. Best farming country in the state. No opposition and eleven miles to nearest physician. Write at once. H. A. Sasse, Druggist, Henry, S. D.

BOOKS AND INSTRUMENTS FOR SALE

The medical library, consisting of 200 volumes, and a collection of surgical instruments belonging to the late Dr. J. B. Gould, of Minneapolis, are being disposed of and may be seen at 3217 Nicollet Ave. N. W. phone, South 383.

WANTED: PRACTICE OR PARTNERSHIP IN MINNESOTA

Must pay \$3,600 cash a year and bear investigation. Town must have electric lights and waterworks. Place near Twin Cities or on Iron Range given preference. Write full particulars. Address 451, care of this office.

PRACTICE FOR SALE

An unopposed practice of \$4,500 in modern town of 500. High school, electric lights, sewerage, etc. Best farming section in southern Minnesota. Will sell modern residence with office, or practice only for nominal sum. Good opening for German or one speaking German. Address 454, care this office.

ASSISTANTSHIP TO A SURGEON WANTED

Assistantship wanted to surgeon, corporation, hospital, or general practitioner, by an experienced physician, who is a competent anesthetist and radiographer. Has had special training in obstetrics and emergency surgery. Has clean habits, good personality, best of references. Address 449, care of this office.

ASSOCIATE WANTED

A North Dakota physician on the main line of the Northern Pacific railway, having a \$9,000 unopposed general practice, wishes a German-speaking associate after April 1st on 50 per cent basis. Expects to turn over entire practice a year later, as he wishes to retire. Must be a first-class man and of good habits. Married man preferred. Address 453, care of this office.

PRACTICE FOR SALE

In North Dakota, \$5,000 practice and modern residence. Railroad town of 800. Good schools, churches, roads, territory, and pay. One competitor. Competent man can make price asked in one year. I did so. Price, \$3,300. Ford roadster, optional. Office equipment included in above price. Address 452, care of this office.

POSITION IN A PHYSICIAN'S OFFICE WANTED

A fine stenographer with six years' experience in a physician's office and as assistant, desires to become permanently associated with a physician in Minneapolis having a large practice. Can give good references. Address 448, care of this office.

HOSPITAL AND PRACTICE FOR SALE

Hospital and practice in northern Minnesota town for sale. All modern equipment in hospital and office including x-ray and accessories. Practice worth \$10,000 during last year. Good opening for real live man who can do surgery. Have a larger surgical field in view, and want to change at once. Address 441, care of this office.

PHYSICIAN WANTED

A first-class physician to take over my Minnesota practice averaging over \$3,600 cash for past four years. Live town with over a million and a half pay-roll; good schools and churches; Y. M. C. A.; city water and sewers; paved streets; electric lights; etc. Chance for competent surgeon almost to double income. I have a splendid offer of contract work elsewhere, and will really sacrifice holdings here for half value in order to make quick sale. One thousand dollars cash will handle, balance on easy payments out of practice. Don't waste my time unless you have cash and mean business. Address 447, care of this office.

PRACTICE FOR SALE

A Minnesota practice, with residence and office, in a rapidly growing town of 600 in southern part of state for price of property. Residence, optional. Three-room office on corner lot adjoining home, \$1,500. Two railroads, two churches, good high school; population, 600. Practice for ten years has averaged \$4,000 to \$4,500 without surgery. Collections 98 per cent. Germans and Scandinavians, with Scandinavians predominating. Physician doing surgery will double practice. Competition just right. Reason for selling, postgraduate work, and excellent opportunity to associate with group of physicians in larger town. Address 445, care of this office.

DOCTOR

Doctor: If you want practical postgraduate work during the fine season in the delightful city, write for particulars. Thirtieth annual session opens September 25, 1916, and closes June 9, 1917. New Orleans Polyclinic, P. O. Drawer 770, Graduate School of Medicine, Tulane University of Louisiana.

PUBLISHER'S DEPARTMENT

A VALUABLE BIOLOGICAL HANDBOOK

The Abbott Laboratories of Chicago will send to any physician, upon application, a free copy of their new biological handbook, which is a real text-book of biological therapy, containing seventy pages with many illustrations.

It gives the uses of bacterins, anti-toxins, serums, and vaccines; and it tells when to give a bacterin or antitoxin, how to inject it, the proper dosage, the reaction to be expected, and why failure may result.

The book contains a lot of useful information.

PHYLACOGENS IN SMALL BULBS

Formerly the six preparations constituting the Phylacogen line were supplied in 10-mil. (10 c.c.) bulbs only. A considerable demand has developed for a smaller package. To meet it the manufacturers (Parke, Davis & Co.) announce the addition of a 1 mil. (1 c.c.) bulb. Each bulb is enclosed in a pasteboard carton, and is accompanied by a descriptive circular. These small bulbs are marketed in packages of five, which enables the druggist to supply the physician with one to five bulbs, as may be wanted. The 10 mil. bulbs, in individual cartons, will be marketed as heretofore. It is confidently believed that the two packages now furnished will meet every demand of the medical profession.

HORLICK'S MALTED MILK

The editor and the publisher of a high-grade professional journal, if not of every journal, are pleased when an advertiser has so much confidence in his own product that the whole tenor of his plea is, "Try my product at my expense; I guarantee satisfaction." To be sure, all manufactured products cannot be thus offered; but it is certain that when such words become the slogan of an advertiser, his confidence will become contagious.

Horlick's Malted Milk has gained an almost universal recognition because its qualities have stood the test of trial by the user; and, apparently, no prospective user has been overlooked, and few have been unconvinced.

PUFFED WHEAT AND PUFFED RICE

The application of intense heat to grains of wheat and rice in such a manner as to burst the food cells, and thus bring them into contact with the digestive fluids of the alimentary canal, is a scientific substitute for long-continued mastication with perfect teeth. As complete mastication and perfect teeth are almost unknown in this busy day, The Quaker Oats Company has done the world a real service in presenting it this simple process of rendering its two leading cereals easily digestible, and in doing this without means of questionable character, such as by chemical treatment.

Puffed wheat and puffed rice are excellent foods, not only for the young and the invalid, but for the adult and the strong; and with the addition of cream they make a delicious, healthful, and nourishing daily food.

BLOOD-PRESSURE

Thinking men among the laity, especially very active, high-pressure business men, are demanding to know their blood-pressure; and this is well, for most men will take warning from an abnormal condition of the heart and arteries, and will slow down.

Because of this fact, and also because consideration of the blood-pressure is essential in so large a per cent of cases, every physician should have a high-grade sphygmomanometer. The Tycos is unquestionably such an instrument. It is manufactured by the A. S. Aloe Company, of St. Louis, Mo., a thoroughly reliable house.

The Tycos is sold for ten monthly payments of \$2.50 each. A 44-page booklet is given free with each instrument. Read the announcement on another page.

CONSOLIDATION FOR BETTER SERVICE

The form of combination that tends to high prices and lowered, or even stationary, quality of product, is not much less obnoxious than the competition that puts before one so many kinds of a certain product essential in one's profession that he has no means of determining which is best or even which fully meets his needs.

There is a form of combination that means better service, efficiency in the product, and fairness in price. We believe the Victor Electric Corporation gained this end when it took over the manufacture of the electrical products of the four manufacturing companies putting out, at unnecessary overhead expense, products essential in hospital and private medical work.

Messrs. Noyes Bros. & Cutler are the exclusive Northwestern representatives of the Victor Corporation for the sale of the products of the four combined companies.

THE ST. JAMES HOSPITAL AND SANITARIUM

The continued success and the usefulness of the St. James institution at St. James, Minn., may well be used as an argument by a physician to induce any other similar community to make possible the founding and maintenance of a like hospital and sanitarium. The necessary initial outlay for the building and equipment is a wise outlay, whether public or private. Health conservation is a community matter, and gives returns to the community a hundredfold, to say nothing of its value to the individual whose life is extended or preserved.

We believe the St. James Sanitarium is doing an excellent work, and because of its admirable building and the comparatively low cost of maintenance, its services have extended far beyond the limits of the city or county in which it is located.

Dr. W. H. Rowe, Jr., its secretary and resident physician, has been associated with its management since its organization.

THE MILWAUKEE SANITARIUM

One can say wholly without exaggeration that the Milwaukee Sanitarium is the equal of any other private institution in America for the treatment of mental and nervous diseases.

Its buildings are attractive, inside and out; its grounds (30 acres), with beautiful lawns, and native and cultivated trees, are a part of the environment;

its equipment is complete as regards mechanical devices, sun-parlors, rest-rooms, etc.; and its staff is headed by Dr. Richard Dewey—all these fit together to meet almost any condition that arises in mental and nervous people.

It is the work of such an institution that makes it safe to say that the only place for nervous and mental patients, as well as for patients suffering from other chronic conditions hard to overcome, is the private sanitarium. This fact is becoming recognized by specialists in many lines.

Information concerning this institution can be obtained from any of its offices, in Chicago, in Milwaukee, or in Wauwatosa.

SEED TIME

To the lover of the vegetable or flower garden, mid-winter is seed time,—the time of sowing expectations, such only as grow in beauty as the day of realization approaches.

Here is "Dreer's Garden Book for 1917" in its 79th annual edition. Its usual colored plate of specialties is more beautiful than ever, and crowns just common things queens of the garden. Here they are, beautiful to look at; Lettuce ("all heart"—of course it is even literally); cucumbers (the best that grow); peppers (Pimiento—that should mean good to eat); beets (Dreer's Excelsior—what other kind would Dreer offer); beans (bush lima—food for the gods); tomatoes (a poor insignificant substitute for an informing name,—"love apple"); and corn (why not call all garden corn by its right name, sugar corn?).

"H. C. L." will not lord it long over the man who asks Dreer (Philadelphia—that's all the address necessary) for his Garden Book, plants the seeds, and follows the book's cultural directions; nor is it probable that such a man will need a doctor during the season.

CHRONIC CONSTIPATION OF INFANTS— ITS PROPHYLAXIS

Many an infant is constipated, but just naturally "outgrows it." This is usually the case where the causative factor is merely the overcrowding of the colon in a small pelvis, for the size of the colon develops, as time goes by, more slowly than does the rest of the body. On the other hand, many a chronically constipated infant grows up in his ways into an intractably constipated adult, so that anatomic structure is not the only consideration.

Prophylaxis, therefore, is the thing. Some physicians get the mother to hold the infant over its chamber morning and night immediately after feeding, long before it has mastered the secret of bowel-control. As a measure of prophylactic training in this connection, there is nothing which will help more than Intero!, for, without cathartic action, it lubricates the fecal mass, soft and plastic, into the sigmoid and rectum, whence its expulsion is a comparatively easy matter in the absence of congenital defects.

This measure, in conjunction with proper feeding or diet and general hygiene, will help the infant or young child to establish the habit of regular stool so valuable to him in later life. A sample of Intero! and literature is sent to physicians only. Van Horn & Sawtell, 15-17 East Fortieth street, New York City.

THE SWEDISH HOSPITAL

The eighteenth annual report, just off the press, of the Swedish Hospital of Minneapolis, is a document of real human interest, for it tells of the growth and the work of one of the most successful and best conducted Christian public hospitals in the West. This hospital is a loving public gift of the Swedish people, and is under the charge of no church or group of men other than its trustees.

It was established in 1898, and then had a capacity of 28 beds, and treated 238 patients in that year. It now has a capacity of 160 beds, and treats over 4,000 patients yearly. Its managers have been foresighted, and have grounds for expansion for fifty years.

It has a large training-school for nurses and gives a course of unusual excellence. Over 100 nurses are employed in the hospital on regular duty.

The medical and surgical staff is composed of some of the best-known Minneapolis physicians and surgeons, general practitioners and specialists. All reputable medical men are admitted to all the privileges of the hospital, and many men not on the staff have patients regularly in the hospital.

The charity work of this hospital manifests itself in two directions: in free beds, some of which are endowed, and in moderate charges, but with no distinction in care and treatment. Every patient gets the best the hospital can give. The charges run from \$7 for children to \$10 or \$15 per week for adults in wards; and from \$14 to \$25 per week for private rooms, with higher rates for rooms with baths. Special hospital student nurses are furnished for \$18 a week, including board. Charges for operating rooms, extra dressings, medicines, etc., are practically the cost price.

A hospital or medical man who visits the Swedish Hospital at once sees on every hand evidence—abundance of evidence—of an unusually efficient superintendent. He will here be found in the person of Mr. Gustav W. Olson. A tour of the building with Mr. Olson is interesting and instructive. In the kitchen, general or diet, he will give you every detail of cooking with gas or electricity; he will tell you the most acceptable substitutes for foods whose prices become prohibitive at certain seasons; he will tell you what are the most palatable and the most nourishing foods for the different classes of patients. Passing into the laundry, he will talk like a laundryman, and describe to you machinery you never saw before. In the engine-room you will learn from him that some coal evaporates a certain quantity of water at a cost of 23 cents, and other coal at a cost of 31 cents; and the charts in the making before your eyes prove it. Another chart demonstrates the quality of stoking done by firemen, who get bonuses for efficient work. In the x-ray room you will be entertained by an expert woman roentgenologist, who will tell you how the department has grown under Mr. Olson's expert knowledge. And so on through the building, your superintendent guide will exhibit a mastery of every detail in every department.

And what does it all mean? It means efficiency—an efficiency of management that affects the work of every member of the medical and surgical staff by meeting his every need; and absolutely controls the work of every member of the house staff, and then every patient in the hospital is affected, and most favorably.

THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, FEBRUARY 15, 1917

No. 4

CYSTS OF THE LARYNX*

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Cysts of the larynx are benign tumors, and produce symptoms which depend on their size and location. Three of these cysts have recently been examined at the Mayo Clinic, and are reported herewith.

she had been perfectly well. During the last month, when swallowing, fluids have been forced into her nose. There had been some dyspnea on exertion; her breathing was quite natural when she remained quiet. She complained that her throat was filled with mucus. For three weeks she could eat semi-solid food only, and for three days she had been unable to swallow any-

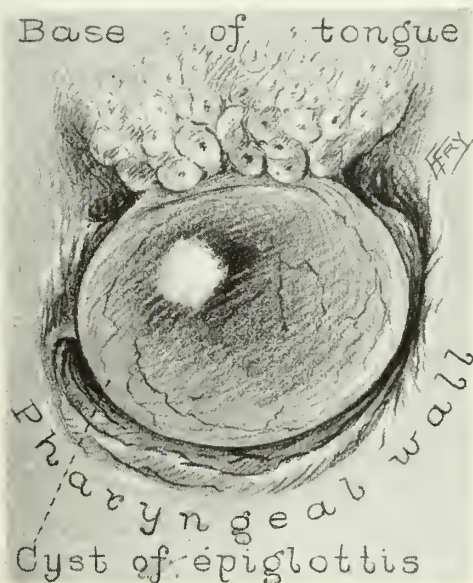


Fig. 1. Case 1 (A 130,087). Cyst of the epiglottis, showing the cyst almost filling the pharynx.

CASE 1. (A130087).—F. G. A., a married woman, aged 26, came to the Clinic on October 7, 1916, because of difficulty in swallowing. She talked as if her throat were full. She first noticed trouble in swallowing eight months previously. This trouble had gradually increased. There had been no previous hoarseness, and



Fig. 2. Case 1 (A 130,087). Cyst collapsed following spontaneous rupture.

thing. Her normal weight was 120 pounds; she had lost 15 pounds since the onset of trouble.

At the beginning of her symptoms a physician was consulted. He said that her tonsils were enlarged, for which he treated her throat from time to time. Two weeks before the examination she had put her tongue out of her mouth, and by depressing the base of the tongue discovered the tumor. The examination

*Submitted for publication December 6, 1916.

of the throat at the Clinic showed large tonsils, and upon pressing down the base of the tongue a rounded tumor was seen filling the throat. With the laryngeal mirror it was seen that the tumor almost entirely filled the pharynx (Fig. 1).

The tumor was cystic and apparently attached to the epiglottis or base of the tongue. The mucous membrane was grayish in appearance, and there were several vessels on the wall of the cyst. The examination was made in the morning; and in the afternoon she returned saying that something had broken in her throat, and she could swallow more readily. The tumor had ruptured spontaneously, had collapsed, and was draining a thin yellow seropus. The larynx had become visible, and the attachment of the cyst was seen to be the lingual surface of the right side of the epiglottis and a small area at the base of the tongue. (Fig. 2.) The cyst was removed by fixing its wall

throat, but he was unsuccessful in removing it. The patient appeared well nourished, weighing 182 pounds; height, 5 feet 4 inches; blood-pressure, 104-76. She had a small adenoma of the thyroid $1\frac{1}{4}$ by $1\frac{1}{4}$ inches, but otherwise the general examination showed nothing of note. In examining the larynx a cystic tumor $\frac{3}{4}$ inch in diameter was found on the anterior third of the right ventricular band, which obstructed the approximation of the cords on phonation. (Fig. 5.) The tumor was removed and the base cauterized with the electric cautery by the indirect method. Her voice immediately became normal.

This case is of particular interest because of the fact that the laryngeal symptoms were due, not to the presence of a goiter, but to the intra-laryngeal (retention) cyst. Microscopically the



Fig. 3. Case 1 (A 130,987). Healing area which extends up onto the lingual surface of the epiglottis, three weeks after the operation.

with a fixation forceps and the use of a snare. After the removal of the tumor the base was thoroughly cauterized with an electric cautery. Fig. 3 shows the appearance three weeks after the operation.

Microscopic examination of the cyst wall showed fibrous tissue in the lining and squamous epithelium on the outside. (Fig. 4.) The pressure of the contents of the cyst apparently had destroyed any epithelial lining that may have been present. It seemed to be a retention cyst, and is of special interest because of its unusual size.

CASE 2 (A173,885).—W. A. McN., a married woman, aged 36, came to the Clinic on September 28, 1916. She gave a history of hoarseness for four years, and was referred for examination on account of a goiter she had noticed six years previously. She had been told that the hoarseness was due to the goiter. She had had slight dyspnea on exertion for two years, but otherwise seemed well. Three months previously a physician had told her that she had a growth in her

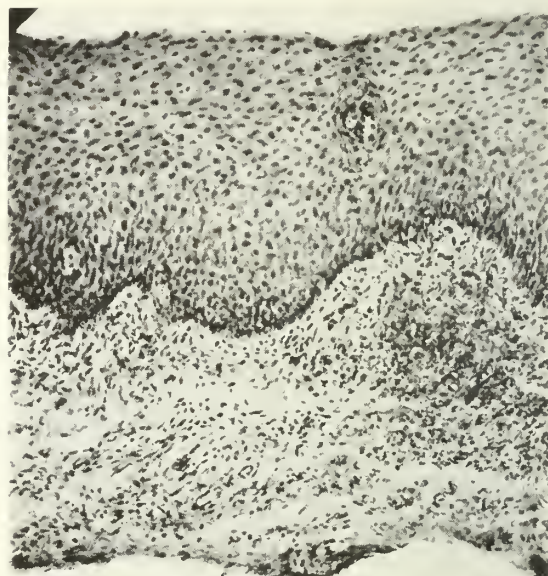


Fig. 4. Case 1 (A 130,987). Cyst wall showing fibrous-tissue lining and squamous epithelium on outside.

picture was the same as that in Case 1. The immediate restoration of the voice on removal of the cyst is an interesting feature, as is the case in the removal of various other small benign neoplasms of the cords.

CASE 3 (A176,018).—J. F. W., a married woman, aged 48. This patient came for examination on October 27, 1916, because of nervousness and worry for fear she had cancer. In the routine examination the cyst of the lingual surface of the epiglottis was found, but there were no symptoms which could be attributed to the cyst, even after the patient knew it was there. The cyst, 1 by $\frac{1}{2}$ inch in size, was on the right side of the lingual surface of the epiglottis. It was yellowish in color and there were blood-vessels over its surface. (Fig. 6.) The tumor was removed with fixation forceps and a snare. The base was cauterized. The cyst contained a dram of pus. Microscopically it showed the same characteristics as Cases 1 and 2.

The fact that this patient gave no symptoms of the presence of the cyst shows the futility of attempting definitely to state the length of time it had existed. At any time this cyst might have flared up, and in such a case, the patient would have given only a short history of her complaint, even though the cyst might have been present for years.

In 1863 Gibb¹ operated on a cyst of the vocal cord, which is the first case reported in the literature. In 1896 Michel² collected 44 cases of cysts of the epiglottis. The relative proportion of cysts to other neoplasms is shown in Beschorner's³ report of a collection of 693 polypoid growths of the larynx, among which were 45

other types of cysts due to the extravasation of lymph and blood are usually found about the vocal cords.

Cysts may occur at any age. Their presence may cause death shortly after birth, as in the case reported by Porak and Theuveny⁵ in which the child lived twenty-four hours. Necropsy revealed a cyst of the laryngo-epiglottic fold the size of a cherry obstructing the glottis. The chest examination in this case was negative. Greene⁶ has found 3 cases of cyst of the epiglottis that caused death in the new-born. Cysts of the epiglottis are usually quite small, about the size of a pea; 1 the size of a hazel-



Fig. 5. Case 2 (A 173,885). Cyst of the anterior third of the right ventricular band.



Fig. 6. Case 3 (A 176,018). Cyst of the lingual surface of the epiglottis.

cysts (6 per cent). Most laryngeal cysts are found on the anterior surface of the epiglottis. This statement is verified in Moure's⁴ report of 117 cases of cysts of the larynx (epiglottis, 50; vocal cords, 45; ventricle of Morgagni, 8; arytenoid cartilage, 4; arytenoid epiglottic fold, 3; santorini cartilage, 1; ventricular band, 2; location not indicated, 4).

Retention cysts may be located in any part of the larynx, but the most common situation is the anterior surface of the epiglottis, and in the region of the ventricle where the mucous glands are most numerous. The embryonic types are found in the aryteno-epiglottic fold and on the lateral laryngeal wall. This would seem further to substantiate Schneider's theory that they are a part of the appendix of the ventricle. The

nut would be considered large. In 1907 Greene reported a cyst of the epiglottis a little more than an inch in diameter. He believes the one reported by Hamilton⁷ in 1899, the size of a hen's egg, to be the largest on record. The cyst in Case 1, reported here, almost filled the entire pharynx.

Etiology and Pathology.—A large majority of laryngeal cysts are retention cysts of the mucous glands of the larynx. This type may develop by the obstruction of a duct of a mucous gland and the accumulation of secretion. Two other types may be found, the first developing from the so-called embryonic origin and the second due to the extravasation of lymph or blood into the subepithelial tissues. The embryonic type is called a congenital cyst and may be present

at birth or it may develop later in life. There are several theories as to their origin. Schneider⁸ believes that they are formed from a pinching off of the appendix of the ventricle of the larynx; and this would seem to be the most plausible explanation. Louys,⁹ however, believes they are of branchiogenoic origin, as the cyst he reported contained cartilage. He says that the mesodermic tissue developing this would come from the mesodermic tissue of the branchial arches. Von Kostanecke and Mulecki,¹⁰ in their work, have not found that at any time in embryonic life the pharyngeal pouch comes in relation to the trachea or larynx. This would seem to throw doubt on Louys' theory as to branchiogenoic origin. Glas¹¹ has pointed out that the location of the embryonic laryngeal cysts is the meeting-point of several germinal layers, but this is not supported from an embryonic basis inasmuch as all epithelial parts belong to the entoderm. Beck¹² brings up the question as to the etiology of these cysts from the thyroglossal duct tissue, but this hypothesis does not seem well founded. It has been said that laryngeal cysts are due to the *ecchinococcus*. Schüssler¹³ publishes one such case, but the etiology is questionable.

Retention cysts when of short duration are lined with columnar epithelium; yet the cyst walls of the three cases in this series did not have epithelial tissue, but they contained fibrous tissue as their inner lining, and squamous epithelium was present on the outside of the cyst wall. The disappearance of the lining epithelium in the cyst is due to the pressure of its contents. The same condition is seen in cysts in other locations in the body.

Embryonal cysts have an epithelial lining, and the cyst wall contains numerous glands. Schneider states that the diagnosis of the embryonic type in his case was made on the presence of numerous glands and much elastic tissue in the cyst wall in which were small lymph-follicles.

Treatment.—Some cases of laryngeal cysts have been punctured and the cysts apparently disappeared. The best method, however, is to remove the cyst wall and cauterize the base where the cyst was attached either by the indirect, direct or suspension method, whichever the individual case may indicate. The treatment of the embryonic type may present greater difficulties, and a thyrotomy may be necessary in order to eradicate the cyst.

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THE SURGICAL LIMITATIONS OF THE GENERAL PRACTITIONER*

By J. H. ADAIR, M. D.

GWATONNA, MINNESOTA

If a man may attempt, without presumption, to discuss from his own standpoint some of the conditions governing the various departments of his profession, and that of necessity in a more or less ex-cathedra manner, a decent regard for the prejudices of his fellow members should prompt him to deal with the subject as imper-

sonally as possible, for we do not, as a rule, regard with admiration the recital of individual experiences, or develop much enthusiasm over conclusions obtained from the angle of a personal viewpoint.

Aside from the purely scientific questions concerning the status and progress of the medical profession, which have long been deemed of greatest importance, are others occupying a bor-

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

der-line region with respect to the interest they command, but which have gradually assumed more prominent positions as our former conceptions of principles and practice became modified to meet the changing conditions of the present.

It is to the brief consideration of one of these subjects that I have ventured to ask your attention for a very short time. Were it not essential to the proper presentation of the matter outlined by the above title, I should scarcely expect to be pardoned for the exceedingly trite observation that the science and art of surgery have made wonderful progress during the time embraced by the activities of those who are still engaged in its practice.

From crude and imperfect theories engrafted upon gross misapprehension of the significance of natural processes, and hampered in its rightful development by the vital lack of co-ordinating knowledge, it has steadily progressed, with the aid of allied investigations, to the point where its superstructure may be proven to rest on the everlasting foundations of truth and scientific accuracy. Dogmatism has given way to diagnosis; and the rank growth of obstructive tradition has been replaced by a vast and orderly array of demonstrable truth. Indeed, so varied and far reaching in its entirety is the sum total of surgical knowledge that no one man, be he ever so versatile, may hope to attain even approximate perfection in all its branches, or deem himself master of its ever-growing domain. No tissue or organ of the body remains free from the intrusion of the surgeon whose dexterity keeps pace with his daring and who makes the impossible of yesterday the commonplace of today.

But these results which mark the present-day aspect of surgery have not been easily attained by any of its successful followers. Rather do they stand forth as the tangible expression of a capacity for unlimited and sustained labor and self-denying effort on the part of each, supplemented by a constancy that has never wavered and a zeal that has never grown cold; indeed, so essential are these qualities to the man who chooses this branch of the profession as the field of his activities, and so necessary is it that they constitute the very warp and woof of his entire being, that there is justification for the adage handed down from the experience of the centuries, that "the surgeon is born, not made."

It follows, irrevocably, therefore, that out of the vast number of fairly well equipped men

only the chosen few will attain prominence in this most difficult field; and this deduction, so theoretically sound, is amply justified by the facts of our every-day experience. The force of these conclusions, however, is not apparent to the medical student in the days of his novitiate. Far more and beyond anything in his pupilage is he impressed with the spectacular aspect of the surgical side of his chosen profession; and its dramatic character appeals to him most forcibly, coming, as it does, at the formative period of his career when the enthusiasm of youth expends itself untempered by the stern repression of painful experience, and undeterred by the certainty of defeat and disappointment. Few and far between are the medical students who have not, at some time during their preparatory career, registered a vow to devote themselves untiringly to the cause of surgical science, and gain for themselves the fame and fortune which presumably are the rewards for single-hearted devotion to its practice.

But the logic of events and the destiny that shapes our ends are such that the vast majority of those who once determined upon a surgical career find themselves eventually forced to join the ranks of the large and uninfluential body of general practitioners.

Now, what is the legitimate province of the general practitioner and with what measure of success should he be content? How far afield should he extend the scope of his professional activities, and what may he legitimately undertake? First, it may be said, with no fear of successful contradiction, that the position of the general practitioner in the community is fixed and waiting for him, and that to an extent and in a manner which permit of little or no variation on his part, be his efforts what they may. A not too discriminating public has marked out for him the path he shall pursue; and against the force of this decision he cannot prevail.

Prohibited in the very nature of things from the opportunity to attain a high degree of perfection in any one branch of his profession, he is expected to show a reasonable degree of proficiency in all. To master and keep pace with all the advancements of his art is now an impossible task, if, indeed, it has ever been accomplished by individual exertion; and eventually he is apt to settle back into a state of stolid indifference to the rapid progress of methods and discoveries, intent only upon the satisfactory ac-

complishment of his daily routine, which gradually grows more contracted as his mental vision lessens. With specialties for well-nigh each organ of the body, filled by keen and aggressive men who devote to the elaboration of their solitary branch time and effort which he cannot hope to emulate, and ordinarily devoid of the necessary prestige to lend authority to his words and deeds, he is apt to eventually regard himself as occupying the rather dubious position of being tacitly respected by all and practically trusted by none.

And now, to consider the subject from the standpoint of this pack-horse of the profession, who patiently spends time and effort and gives of his best for the benefit of the community, content in general with the knowledge of labor well-bestowed and duty unsparingly fulfilled, we ask, what may he hope to achieve of fame or fortune in the pursuit of this most exacting branch of his profession, or, rather, what should he attempt to do, and prepare himself for doing, in the way of surgery? I judge that the correct answer to this will be found to depend largely upon his adaptability to the changing requirements of means and measures, and to the normal functioning of his moral sense.

For many years it was held that, of the two types of surgery, elective and emergency, it was the privilege and duty of the general practitioner so to familiarize himself with the management of the latter as to be fairly competent to deal with, at least, the more common types, as they are bound to occur in the practice of all from time to time. As the occasion for the exercise of his skill in these more or less vivid contingencies was abrupt and unforeseen, often in situations far removed from all conveniences, as well as necessities, under circumstances admitting of no delay and compelling the use of the crudest appliances, he was deemed excusable if his conduct of the necessary procedures involved, partook somewhat of the same character.

The status of so-called emergency surgery, however, has gradually been changed, for the field embraced by it has vastly widened from year to year in accordance with the greater range of our industrial life, and the ancient custom of fitting to the emergency itself emergency measures and technic, bringing to the treatment of such cases improvised methods and a chronic state of surgical unpreparedness, will no longer suffice. The boundary line between these and

the operations of choice is but a visionary one at most, and the victim of trauma, however and wherever sustained or of whatsoever degree of severity, is entitled, for cosmetic as well as the more important industrial reasons, to the same care in preparation, the same thoroughness in detail, and the same solicitude for his ultimate well-being, that is afforded the individual who submits to a procedure under favorable conditions of time and place.

Thus far the general practitioner may feel himself entitled, by reason of adequate preparation, by temperament and by environment, to deal with this branch of surgery. Is he justified in attempting to cope with conditions outside and beyond these limitations? In short, shall he deliberately enter the field of the general surgeon and take upon himself his manifold responsibilities in addition to those inseparably connected with the daily life of the ordinary physician? This involves the consideration of another aspect of the question, which, I believe, cannot have escaped the attention of all who have given it serious thought.

Whatever may be our private convictions as to the actual necessity for the vast amount of surgery, good, bad, and indifferent, well-judged or hastily undertaken, which is being perpetrated upon a defenceless and unsuspecting public all over our fair land, we must of necessity admit the palpable fact, that at present we are undergoing a period in the history of the profession when a surgical furor has seized upon large numbers of previously reputable men, and converted them from the safe and sane counsellors they formerly were into over-zealous and enthusiastic surgical tyros, who, if they do not "rush in where angels fear to tread," are, at least, apt to prepare their unhappy patients for immediate association with these celestial visitors.

The ancient formula for the essential requirements of the surgeon—"the eye of an eagle, the hand of a lady, the heart of a lion," with the sound judgment of an informing and well-stored mind to govern and control their exercise—has, I fear, in these latter days of hospital and laboratory, with their lavish display of diagnostic and operative equipment, been relegated to a secondary position in the surgical world, while the ambitious adventurer in its realms relies upon the adventitious aid of these modern facilities to overcome his deficiencies of mind and training as he cheerfully pursues his devious

way amid the pitfalls which surround his disastrous path. And so it has come to pass as an inevitable consequence of this fatal facility for the indulgence in all forms of operations, stimulated no doubt by the eager insistence of the laity, who have come to regard some form of interference as essential in almost every condition of ill health, that multitudes of unfortunates are wandering up and down the length and breadth of the land, each bearing upon his scarred body the sign manual of incompetent and unnecessary surgery, living examples of confidence betrayed and victims of that hope deferred which, we are told, maketh the heart sick.

That these statements are not gross exaggerations of fact or fanciful imaginings of my own, is abundantly attested by recent efforts to standardize the practice of surgery, invoking for this purpose if necessary the police power of the state in order to lessen a condition which is fast becoming a menace to the fair fame of the science of medicine, and casting discredit upon the legitimate work of competent men. Whether corrective measures of this nature will ever be attended with marked success, is for the future to decide; and I shall not presume to forecast the ultimate solution of this weighty problem.

I have said that the fixing of the surgical limitations of the individual physician will depend in great part upon his conscience; and by this I mean the more or less lively appreciation each man possesses or should possess of his own shortcomings in the matter of training and technique, and the commensurate sense of responsibility involved.

I have not in mind an abnormal self-depreciation, so fatal in its paralyzing effects upon all healthful incentive, but, rather, the moral orientation which is vitally necessary to the proper adjustment of his relations with his clientele and the community at large. More and more, as the advancing years crystallize our mental processes and limit the range of our activities, do we normally grow conservative in word and deed, and find the hopes and aspirations of youth replaced by the tempered judgment of maturer age.

If, fortunately for him, our brother has become a fixture in his particular community or neighborhood, and has gained, as he should, the confidence of his acquaintances, he will reach a period in his career when the burden of responsibility for the physical well-being of his friends will weigh heavily upon him, and he will welcome with satisfaction the opportunity to divide responsibility and lessen anxiety.

Happy the man in this situation whose mental attitude is such that he can contemplate with equanimity the changing fortunes of his life and labors, undisturbed by the temptation to exploit his reputation at the expense of discretion or the saving grace of common sense. In the momentous questions affecting the health and, it may be, the life of those who rest confidently upon his decision, he will be governed solely by one consideration, the welfare of his patients; and, irrespective of all other conditions, he will hold steadfastly in his mind the ideals and traditions which are woven into the fabric of our art.

THE HEMATOPOIETIC-HEMOLYTIC INDEX: A PROPOSED DETERMINATION HELPFUL IN THE DIFFERENTIAL DIAGNOSIS OF TYPES OF PERNICIOUS ANEMIA AMENABLE TO CURE BY SPLENECTOMY*

BY J. P. SCHNEIDER, M. D.

MINNEAPOLIS

Idiopathic pernicious anemia, so called, is a laboratory fabrication. Dating from Ehrlich's period our comprehension of anemic states has been largely based upon the blood-picture. We have endeavored to grasp the underlying pathology from a secretion, precisely as we did, and still do, in the realm of gastro-enterology. While

great progress was made in both instances, at the same time it has become more and more evident that, precisely as in gastric affections, the results of a test-meal may be of little or no value, so a routine blood-examination may be quite insufficient for a proper knowledge of the underlying pathology of a given anemia. Chronic enteric bleeding anemia may imitate the parenchymal or splenic type. Chronic sepsis without

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

direct splenic participation, may give a pernicious-like blood-picture. The parenteral anemia, while splenic, may be fathered by the streptococcus, tubercle bacillus, or treponema. Since the blood is but an intermediate secretion, the product of two varying factors, marrow supply and spleen-liver destruction, a study of the blood-picture alone seldom determines where the predominating pathology resides.

To gain, therefore, additional information relative to whether a given anemia is actually, as the blood-picture would make one believe, splenic in origin, and, if so, to establish the stage of the latter, we have during the past two years studied the severer anemias from the viewpoint of the duodenal blood-derived pigments.¹

During this period we have made a total of 81 studies in 59 patients. Of these, 20 are patients with pernicious anemia, 1 hemolytic icterus, 11 severe anemias other than splenic, and the remainder miscellaneous conditions, non-hemolytic in character. Of the patients with pernicious anemia 7 have been splenectomised.

That the blood-picture and the clinical picture of chronic enteric bleeding anemia may be mistaken for parenteral anemia, is illustrated by the findings in 4 cases, all of these proving at operation or autopsy to be carcinoma of the stomach. The duodenal pigments presented an oligochemia in degree parallel with the severity of the anemia. Hence, while the blood-findings *become* more and more difficult of interpretation, the severer the bleeding anemia, the duodenal-pigment values stand more strikingly at opposite poles. It is, therefore, of prime importance in a given case to confirm by a quantitative estimation of the duodenal pigments the splenic origin of an otherwise classical pernicious, particularly when splenectomy is contemplated.

Having established that the case in question is one attended by the high urobilin and urobilinogen values of hypersplenism, the next step involves a critical study of the stage of the malady. We have stated elsewhere that certain types of pernicious anemia early in their life-history present features pointing to very great blood-destruction (at such a period there may be little or considerable alteration in the blood-picture), depending largely upon the type of the individual affected, but the attending chronic jaundice with enlargement of the spleen bears evidence of the fulminating destructive process. There may or

may not be a yellowing of the conjunctivæ and a skin altered by scratching. To definitely decide how much destruction still overshadows marrow incompensation and, therefore, to confirm in a measure the probable efficacy of splenectomy, we propose that which we have designated as the hematopoietic-hemolytic index² be ascertained.

$$Z + Y$$

Briefly, the H-H index = $\frac{Z + Y}{X}$ in which Z

represents the thousands, including the first decimal of the total pigment values as determined quantitatively by the spectroscopic method, Y the same of the blood-count in round numbers, and the value of X, 6. To illustrate: in a given case with the total pigment values around 5,400, the blood-count 1,500,000.

$\frac{5.4 + 1.5}{6} = \frac{6.9}{6} = 1.1$, which

is a plus index. In another case the total pigments are 2,200, the blood-count is 1,500,000, the

$\frac{2.2 + 1.5}{6} = \frac{3.7}{6}$, or .6 —, which is a

severely minus index. In the former case so much pigment could not be obtained unless the marrow still supplied the raw material in great abundance. This is clearly exemplified in our case of hemolytic icterus with an index of 1.4. In the second case, while the blood-count stands at the same level as in the case first cited, the pigment yield points to insufficient delivery of the marrow,—a hypohematopoiesis.

In our series of twenty cases, seven only yield a plus H-H index, while two approach an index of one. Of these seven, three have been splenectomised with apparently more than the rather usual temporary improvement. However, since less than one year has elapsed since splenectomy it is still wise to withhold judgment.

In conclusion, we will state that in our opinion splenectomy should be reserved for the cases presenting the all too briefly above outlined favorable clinical features and a plus H-H index.

DISCUSSION

DR. H. Z. GRIFFIN (Rochester): We have been particularly pleased that a member of this Association has devised this duodenal test. We have been very enthusiastic in taking up the work, and have done the duodenal test as a matter of routine in cases of pernicious anemia and hemolytic jaundice, and have carried on at the

¹See "The Splenic Pathology of Pernicious Anemia and Allied Conditions." Arch. Int. Med., Jan. 1916, vol. xvii, pp. 32-41.

²See an article to appear shortly in Arch. Int. Med.

same time estimations in a certain number of clearly secondary anemias.

Our series of duodenal examinations now runs over one hundred, in a total of seventy-six cases. Our findings in general have corroborated entirely those of Dr. Schneider. In our secondary types of anemia, those secondary to chronic sepsis and to carcinoma, the values have all been low. In the hemolytic types of anemia, they have practically all been high. For instance, in all of the cases of pernicious anemia save just a few the total valuation for urobilin and the urobilinogen has been above one thousand, and in those in which it has been below one thousand it has been only slightly below that figure.

It became rather evident early in the series that, in a general way, we could say that the cases showing high values in duodenal contents and at the same time a relatively good blood-picture, that is, those in which the evidence of blood-destruction as obtained from the duodenal contents was marked, and in which the bone marrow could nevertheless supply a sufficient amount of blood to maintain a good blood-picture—in those cases there seemed to be a rapid gain after splenectomy. This seemed to demonstrate that the removal of the spleen did diminish blood-destruction, a conclusion which was further corroborated by the findings after splenectomy in twelve cases, of a reduction in the duodenal values; sometimes a very great reduction, from as much as 6,000 total in one case to 500 total after splenectomy. Sometimes this reduction would occur within the first month, and again, as in one case, as long as six months would elapse before the reduction completed itself.

So that these results seemed to indicate that splenectomy, in certain groups of cases, does markedly diminish blood-destruction and probably gives the bone marrow a better chance to supply the deficiency of blood.

In hemolytic jaundice the same thing holds true, save that much higher values are obtained in comparison to the degree of anemia. The anemia may not be so severe, and at the same time the duodenal values may be much higher. We have also obtained high values in myelogenous leukemia.

Dr. Schneider has now gone a step farther and has given us the index, which of course must be tried out from a practical standpoint, and its application is not difficult. For instance, if the patient has a blood count of 1,500,000 cells and a total duodenal value of 5,000 units it is a simple matter to add the five to the one and one-half and obtain six and a half, which is above six. If it is above six the index is high.

We are very anxious to push this work still farther. Certainly, in a few years something definite will result from this very important work of Dr. Schneider's.

DR. E. L. TUOHY (Duluth): The work of Dr. Schneider has been of deep interest to us, and we have had some little experience with it. Five of our cases had been splenectomized for what was considered to be clinically pernicious anemia. Several have been candidates since this duodenal test was described, and we began its use, but we have decided not to do splenectomy.

It would seem from our observation that the number of cases that conform clinically to pernicious anemia, in which pleiochromia is demonstrable in the duodenal

content, is smaller than might have been expected. This accounts in part for the unhappy results of the earlier splenectomies.

Two questions occur: first, are there not a few cases that conform clinically to what we call pernicious anemia as judged from the blood-picture, the tendency to remissions, and exacerbations, in which we do not find the characteristic excess of pigments in the duodenal contents, at least while we are able to observe them? It must be granted, of course, that the condition might have obtained even in the beginning, even for a short time, and before the patient sought advice.

The next question deals with the interesting problem of the mechanism of blood-destruction after splenectomy. We have now observed a few of our own cases and several done elsewhere, where the patient after splenectomy followed the same course as before and gradually succumbed. If the spleen has been taken out, and the patient does not have a pleiochromia as shown in the duodenal contents, where is the blood destroyed?

Schneider's test of the duodenal contents is of the very greatest value in differentiating, as he points out, malignancy or enteric bleeding from a true primary anemia. Its further elaboration and development may prove of indirect value in many other obscure intestinal conditions.

DR. GEO. DOUGLAS HEAD (Minneapolis): I would like to ask Dr. Schneider a question which bears rather pertinently upon the subject under consideration. As most of you know, the spleen during intra-uterine life has been considered primarily as one of the organs in which the early blood-making function has been carried on, this hemopoietic function being taken up in later intra-uterine life and in extra-uterine life by the bone marrow. So far as I know, the work of Howell, together with that of other observers, has pretty definitely established this fact. For this reason it has always seemed to me that the removal of the spleen as a method of treating pernicious anemia ought to be undertaken with a good deal of caution until such time as more definite knowledge relative to the etiology of the disease was known.

Is it not possible that in removing the spleen we are removing one of the organs that may be depended upon even in extra-uterine life under the demands made upon the blood-making organs consequent upon severe loss of blood to help out in the production of red-blood corpuscles? Dr. Schneider, I know, is familiar with the embryology of this subject, and I would like to ask him to state the reason why the removal of the spleen is advocated in the treatment of this disease, and how this method of treatment is correlated with the embryological fact which I have just stated. I would like to call your attention also to another view from which this whole matter should be considered.

The statistical reports thus far available in the literature, in which the treatment of pernicious anemia by splenectomy has been employed, are not at all convincing that this method offers any advantages over the treatment formerly employed in the management of this disease.

The Addisonian type of pernicious anemia in its typical form is a disease of exacerbations and remissions continuing often over years. Under my observation at the present time is a case of typical pernicious anemia which developed its first symptoms six years

ago. The patient has had five or six exacerbations during that interval of time.

While a large percentage of the cases die within two years following the time when the patient first comes under observation there is a considerable percentage that live on four, five, or six years, or even a longer period of time. It is a well-known fact to observers of this disease that very frequently the course of the disease, without apparently any change in the treatment, will suddenly become modified and the blood will regenerate itself within a few weeks. It is important, therefore, in attempting to estimate the real value of splenectomy, to bear in mind the natural history of pernicious anemia and not to be misled by the reported cases studied over a short period of time in which an apparent cure has resulted.

DR. SCHNEIDER (closing): In answer to Dr. Tuohy's second question relative to the possibility of blood-destruction after splenectomy: we must bear in mind that the spleen is but an aggregation of lymph-glands, that similar isolated so-called hemlymph glands are present everywhere in the abdominal cavity, that these glands participate in the function of the spleen, and after splenectomy vicariously may assume a much greater rôle in perpetuating the building-down of the red-blood cell. These glands are found, rather constantly, of abnormal size and filled with brown pig-

ment at autopsy in cases of pernicious anemia. Again, the liver is implicated not only as accessory after, but before, the fact. A very high percentage of cases will give a history of stormy onset with fever and jaundice, frequently labeled a catarrhal jaundice. The enormous pigment burden handled by the liver in the earlier years in the life-history of pernicious anemia, produces, by the presence of the pigment granule, cirrhosis and hence vascular changes not amenable to surgical relief.

Relative to the first question: I can only say that the ability of a given individual to maintain competency of marrow supply will be dependent ultimately upon two factors: first, the type of individual, whether normal or aplastic, and, second, the degree of direct injury the specific noxus has produced in his marrow as an organ.

Dr. Head's question relative to the consideration of the spleen as a hematopoietic organ, I can answer by stating that the post-fetal spleen fails to establish its claim as an organ of blood-manufacture. For this definite negative evidence we must thank the surgeon-pathologist. The post-mortem spleen is useless for either pathologic or bacteriologic study. On the other hand, I have in my possession photomicrographs of sections of splenic tissues, recovered at operation in pernicious anemia, showing the pulp crowded with phagocytes, literally choking with erythrocytes in various stages of hors-de-combat.

ACUTE DILATATION OF THE STOMACH IN PNEUMONIA*

BY A. F. BRATRUD, M. D.

GRAND FORKS, NORTH DAKOTA

We are all familiar with pneumonia,—its etiology, causes, symptoms, pathology, and complications. Acute dilatation of the stomach is a rare complication in pneumonia, though in a review of literature we find it to be a more common sequel or complication to pneumonia than is generally believed. It is a condition which occupies the attention of the surgeon, as well as of the internist, for, as a post-operative complication, it sometimes occurs. Fussell, in 1911, reported 4 cases found in pneumonia. Laffer, in 1908, collected a large series of cases (217) found in surgical operations, and 1 case found in maxillary sinusitis. In the papers of the Mayo Clinics for 1913, only 3 cases were reported, though here early gastric lavage is begun and continued as a routine measure in any post-operative case in which vomiting persists six hours or more after operation.

It was first brought to the attention of the medical profession by Rokitsansky, who, in 1842, published the first literature on the subject. Various reports have been made since that time.

Fagge, in 1873, in Guy's Hospital Reports, gave a comprehensive and detailed report, but not until 1899, when Albrect collected 19 cases, did we have any accurate knowledge concerning symptoms, morbid anatomy, and pathology of this condition.

Recognized early, it is usually relieved, but when unrecognized it is fatal in from sixty to seventy-five per cent of the cases. I will give a brief report of two cases:

CASE 1.—Miss I. J., a female, aged 19; height 5 ft. 2 in.; weight, 160 lbs. Father is living and well; mother is living and well; three brothers and four sisters are living and well; one sister is dead of lobar pneumonia at the age of 15 years. Characteristic of the entire family is the overweight and predisposition to pneumonia, as four other cases of pneumonia have occurred in the family.

Her personal history is good. She had been suffering from a bad cold for one week when, on January 31, 1915, she was seized with an acute attack of chills, fever, rapid respiration, cough, and pain in the right chest. She was seen on January 23, and her condition ran as follows: Temperature, 102°; pulse, 100; respiration, 38; face, flushed, and at this time she complained of epigastric pain; small area of consolidation at the base of the right lung posteriorly; distension, moderate. An enema was given with a fairly good

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

result. A mixture of ammonium chloride and codein sulphate was left with her.

On January 24, 1915, the patient was much worse, complaining of severe abdominal pain in the epigastric region, vomiting of a greenish-colored fluid, and excessive thirst. Her mother spoke about splashing sounds in the patient's abdomen. Condition at the time: pulse, 120; temperature, 103.2°; respiration, 44; physical findings in chest, unchanged; general abdominal distension; very little urine was being passed; albumin was present, but no casts; splashing sounds could be heard without the use of a stethoscope; no fluid could be detected passing the pyloric sphincter.

On attempt at gastric lavage the patient became so cyanosed that the tube was withdrawn. An enema was given with expulsion of gas and flatus; and now a circular mass extending across the abdomen could be seen three finger-breadths below the umbilicus. Gastric lavage was given, with the result that over 2,000 c.c. of tarry green-colored fluid was expelled, with an immediate relief of pain and improvement of pulse. Eserin, 1/100 grain, was given hypodermically. The ammonium chloride and codein sulphate mixture was discontinued. The patient was placed as nearly on the abdomen as possible.

On the following day the patient passed about 1,500 c.c. of similarly colored fluid per bowel; no change in pulse, temperature, or respiration. On January 25 there were vomiting, thirst, severe abdominal pain, weak pulse, and increased respiration. Gastric lavage yielded 1,000 c.c. of greenish-colored fluid and immediate relief of pain. Her general condition improved. The crisis occurred the following day. Recovery was good.

CASE 2.—The patient was a girl 14 months of age. She was seen on February 4, 1915, after being sick for two days with fever, vomiting, rapid respiration, and slight abdominal pain. Temperature, 104°; pulse, 126; respiration, 48. Consolidation in upper lobe of right lung posteriorly. General abdominal distension. As the stomach-tube entered there was a large quantity of gas expelled and 100 c.c. of thin yellow-colored fluid. Improvement of symptoms was noticeable at once. Gastric lavage was continued every six hours for three days. Very little fluid was expelled, but always a large quantity of gas. Recovery was good.

As symptoms and physical findings in pneumonia are so well known, I shall not enter into discussion of them. This complication occurs more often before than after the crisis. Its onset is sudden. Pain, the first symptom which we think of, may or may not be present, though when present it is severe. Pain radiating to the epigastric region, or any of the four quadrants of the abdomen, often occurs in pneumonia, so we cannot determine whether it is the result of a primary condition or a complication.

Abdominal distension should at once call attention to a complication, especially if associated with rapid pulse, nausea, and, at times, vomiting. This distension may be general, but is usually circumscribed, and may be limited at any line from the umbilicus to the true pelvic brim.

At times no circumscribed swelling can be made out, as general abdominal distension may be associated or the dilated stomach occupy the entire abdominal cavity.

Splashing sounds are at times heard, and auscultation will be a great aid in determining whether or not these are in the stomach. Peristalsis can at times be seen in the region of the stomach, and here auscultation will aid greatly in determining whether any fluid is passing the pyloric sphincter.

The character of vomiting may vary from belching of gas to projectile vomiting. The quantity varies from a mouthful to several quarts. The type may be regurgitant, projectile, or incessant. The color varies from a black to a yellow, although the most common color is a dark-green to tarry-bile. This color should at once arouse suspicion, especially if it has a bad or fecal odor. Chemical examination of the vomitus gives no information, as it varies from an achylia to a hyperchlorhydria, and, even at times, lactic acid is present. Diastasic ferments and sarcine have been found, although the latter may have been the findings in an acute dilatation of a previously chronic atonic stomach.

A symptom which is in most cases present, and which may cause a wrong diagnosis to be made, is the anuria, but in acute dilatation there is always associated an unquenchable thirst, and this causes no little trouble in treatment. Combined with the thirst and anuria there is a tendency toward delirium rather than the semicomatose condition common in uremia. The cause for these two symptoms is, that no fluid enters the small bowel. Absorption of fluids takes place in the small and large intestines almost entirely, and here there is constant drain of body fluids with no absorption, unless it be toxic products of secretion.

Cyanosis is often present, although sometimes found in the later stages of pneumonia. Hic-cough does not occur often, but when present should arouse suspicion of gastric irritation or of an inflammatory condition of the diaphragmatic region.

Either constipation or diarrhea may be present; constipation is the rule, diarrhea the exception.

Delirium may come early or late, depending on the toxicity of the predisposing cause, as there is not much absorption of toxins from gastric mucosa. No literature as to toxicity of the gastric contents was found, but we know of the toxicity of fluid above any obstructive piece of

bowel and the toxic symptoms produced when these contents are liberated into a healthy piece of bowel and absorbed.

Collapse occurs frequently; the face is pinched and anxious; the eyes, sunken; and respiration is rapid. This often gives rise to the first suspicion of any severe complication.

Various causes have been given for this condition. When it was first described by Rokitan-sky, in 1842, he attributed it to a compression of the duodenum from pull of the mesentery of the small intestine, and especially by the superior mesenteric artery and nerves contained in the root of the mesentery. Where the duodenum is crossed by the root of the mesentery there is normally enough pressure to cause a slight hindrance to onward pressure of the flow of the contents of the duodenum so as to hold back bile and pancreatic juice. This is overcome in two or three hours after a meal by chyme, which stimulates the duodenum to contracture.

The mechanism of peristalsis, as shown by Cannon, is that a stimulus in one point of bowel causes a contraction with a relaxation of the bowel wall farther along, and, hence, favors expulsion of the contents of the bowel. Great pressure in the bowel wall may cause paralysis of Auerbach's plexus, through which the reflex passes; but this will withstand pressure for three or four hours before paralysis occurs. Cannon has also shown that tonus, as an essential factor of gastric peristalsis, is first given by the vagus impulses and later maintained by the stomach itself, for severing the vagi before feeding results in inactivity, while severing the vagi after digestion has started causes no change in the gastric movements or in the rate of discharge. Absence of stomach movements, for example, in states of exhaustion, such as may occur in severe toxemia, can be explained by failure of the vagus impulses and in emotional states by the presence of the splanchnic impulses. Both conditions result in absence of gastric tonus.

More evidence is accumulating pointing to some toxic agent as the cause of the acute parietic condition of the stomach and the increased activity of gastric glands, both of which conditions may result from interference with the nervous mechanism of the stomach.

Braun and Seidel hold to the enervation theory, as, by experimental work on animals, they found that by section of the vagi the animals were unable to empty their stomachs after tartar emetic was given, but vomited promptly after

apomorphine was given. Section of sympathetic fibers had an inhibiting influence on vomiting. Section of the spinal cord between the last cervical and the sixth dorsal prevented vomiting even after apomorphine was given. No results were produced by sectioning the cord below the sixth dorsal, so this could not have been due to shock. This shows the importance of enervation fibers to the gastric motor apparatus lying between the last cervical and the sixth dorsal.

Under general anesthesia there is paralysis of the vomiting center. On awaking there is hyperexcitability of the vomiting center, with a gradual return to the normal condition; but in some cases there is exhaustion and even paralysis, and then an acute dilatation of the stomach.

Other factors not to be overlooked are the abnormal attachment of the mesocolon to the peritoneum of the duodenum and the posterior parietal peritoneum and resistance of the cardia to intragastric pressure, especially if well-developed valves exist at the cardia. Von Mikulicz was unable to draw any conclusions from experiments with the latter of these two, as his results were so variable.

Autopsy findings of the condition vary, the dilatation taking place in the stomach itself, or there is dilatation of the stomach and duodenum. The opposite of this condition occurs more commonly,—that is, there is dilatation of the stomach, or of the stomach and the duodenum, with all the coils of the intestine contracted rather than dilated. The characteristic feature is the enormous size of the stomach.

In differential diagnosis of this condition we shall only consider the most important,—general abdominal distension, pancreatic cyst, acute hemorrhagic pancreatitis, acute pancreatitis, intestinal obstruction, perforative peritonitis, and uremia.

Pancreatic cysts and acute hemorrhagic pancreatitis can be ruled out by gastric lavage, and acute pancreatitis by the severe excruciating pain and the diarrhea, which may accompany it. The history of the case is always a great benefit in all of these conditions.

Uremia does not have the active delirium which may be present in this complication, but there is more of the dull, unconscious, or semi-comatose condition, and no distension. In uremia the history and urinalysis should be valuable aids. No splashing sounds are heard.

One of the hardest things to differentiate, and one which is often present, is general abdominal

distension. Here peristalsis, if present, may be heard over the entire abdomen. Lavage will usually clear up the diagnosis, although often these two conditions exist at the same time. Intestinal obstruction will give a similar picture. Pain and vomiting will be of no differential value here. Auscultation may give more definite information if typical auscultatory sounds of an obstruction are heard. In general peritonitis there is more marked tenderness than in acute dilatation, although this is not always present. The history of the case and the physical findings are of value. Lavage of the stomach does not remove the mass. Examination of the blood in these cases will not be of great value, as the leucocyte count may vary from 10,000 up to 70,000. The differential blood count will usually show only a relative increase of the polymorphonuclears.

TREATMENT

Gastric lavage as soon as the condition is suspected and, if confirmed, continuous gastric lavage from every four to six hours, according to condition of the patient, is indicated. Vomiting and thirst can be combated to a certain extent by tap-water per rectum or by hypodermoclysis, glucose to be added to the liquid in order to overcome acidosis and re-establish the glycogenic balance of the liver. No food or liquid is to be given per mouth. To aid in overcoming mechanical obstruction, which occurs by constriction of the duodenum under the root of the mesentery, the patient is placed on his abdomen or on his right side. Eserin or pituitrin may be given, and probably no drug has more action than pituitrin, especially where the intestines are in or near a state of ileus.

SIXTY-FIVE CONSECUTIVE CASES OF GRAVE APPENDICITIS WITHOUT DEATH OR IMPAIRMENT*

BY DANIEL V. MOORE, M. D.

YANKTON, SOUTH DAKOTA

People have grown almost too used to the word *appendicitis*. Frequently self-satisfaction is observed following an invasion of this insidious malady, for the reason that the attack means for the surviving individual a little notoriety and all manner of sympathy. But it has come to pass that many people consider it "brave," "heroic," and even wisely conservative in the presence of appendicitis to wait, to delay, and, if left to themselves, to procrastinate until the hour has arrived when it were far better for all concerned to devote their attention to the patient's soul rather than to his body. The sight of the funeral cortege is the only proof which some seem to accept that this dangerous condition of the bowel is more than liable to bring them to "strict accountability." It is because of this extremely dangerous element, delay, which seems the evil genius in most homes, that the surgeon is so frequently face to face with grave forms of appendicitis. However, it is well known that overwhelming involvement may develop from this disease within a few hours. But this double-edged danger is not yet fully realized by most people. They do not seem to believe that a sudden invasion from

the appendix can result in a peritoneal catastrophe within a few hours. They refuse oftentimes to accept proper counsel until after nature's first line of defense has been taken. And when life's citadel is being stormed from every angle by an ever-increasing enemy, then there be those who expect the surgeon to work wonders with the patient's weakened and demoralized reserves. When people realize that a pain from the appendix is more dangerous than a bite from a rattlesnake, and act accordingly, then appendicitis will have been shorn of its dangers. The profession has a duty to perform toward the people concerning the people's apathy and indifference toward any form of appendicitis. A propaganda for instruction should be launched. Negligence of whatever kind in dealing with this malady, be that negligence active or passive, should be looked upon and branded as criminal, and the instigator of such negligence should be recognized as an enemy to society. Where is the surgeon who has not felt deep emotion when operating in the presence of pus, gangrene, and peritonitis? The reason is obvious.

In giving a brief report of 65 cases which presented grave and alarming features, and which were followed by complete recovery, fol-

*Read at the 35th annual meeting of the South Dakota State Medical Association at Aberdeen, May 23 and 24, 1916.

lowing operation, it is hoped that good may come from describing in detail what may properly be termed an "assembled" technic. These cases were forced to operation by their gravity; and the following classification seems entirely proper:

Eighteen were of the waterlogged, strangulated type. The erectile edematous condition of these appendices has been described by Robert T. Morris as cases with "mucous inclusion." Strangulation of the inner coats produced the trouble in this class.

Fourteen cases presented with omental adhesions. The organ was entirely enveloped by the "abdominal hand." In 7 of these cases a portion of rather doubtful appearing omentum was removed. Pus was found within the omental "hand" in 9 cases.

Thirteen were fortified with extremely dense adhesions, organized adhesions. In this class the appendices were deeply embraced in the substance of the cecum and had all the appearance of "fibroid degeneration."

Twelve were gangrenous. Five of the gangrenous were complicated with pus and feces. One of these was complicated with a strangulating Meckle's diverticulum, and necessitated the removal of three feet and eight inches of gangrenous ileum. One appendix was found to contain fragments of an egg shell, another gave lodging to three raisin seeds, and another possessed a long tooth-brush bristle.

Seven presented the common homogeneous, mushy, semi-organized exudate.

One had a distinguishing "kink," and was studded with miliary tubercles.

The first step, if possible, in the technic is a message of hope to the patient. All fears are allayed. Preliminary, in fact all, examination is done when possible before the patient arrives in the hospital. "In treating the patient do not forget the man," is the first and last watchword during the patient's illness. Most deliberate care is exercised in securing data concerning the patient's power of resistance. Pain is relieved at once, preferably by Magendie's solution. If the heart is flabby, and the patient's general tone is not satisfactory, saline is started intravenously, supplemented by camphorated oil and caffein sodiobenzoate, hypodermatically. The saline solution used is a one-and-one-half or two per cent solution, and is not the so-called normal solution. In these cases where delay is insisted upon and the family holds up active treatment

until "tomorrow," two measures are carried out:

First, the sand-bag is placed instead of the ice-bag. The only virtue in the ice-bag lies in the assistance its weight affords the rectus muscle. The sand-bag aids the omentum, the rectus abdominis, the gas, and intra-abdominal pressure in giving rest and quietude to the diseased and tender appendix and cecum. The gradually increasing weight of the sand-bag is the second best "outside" reinforcement for nature's "kinetic drive." It acts as a splint to parts in sore need of rest.

The second measure in the presence of forced delay, providing the patient's history warrants it, is castor oil. This purgative is not given if there is marked anastaltic action evidenced by profound nausea and vomiting, or if operation is not positively arranged for. The argument in support of purgation was ably presented and defended by Dr. A. I. McKimmon, of Lincoln, Nebraska, about two years ago, in a paper read before the Missouri Valley Medical Association. There is no reason to doubt the efficacy of cleansing the bowel when it is possible to do so without danger. On the other hand, it is well to heed the warnings of such men as Deaver and Haggard,¹ who stand firmly against purgation of any sort in these cases. It is well before giving physic to recall the observation of Cannon,² who says: "The moment the semi-fluid content enters, strong contractions take place all along the cecum and first part of the ascending colon, pressing the material forward. These forces are met by deep anastaltic waves coming down from the transverse colon, sweeping back into the cecum the advancing masses of food." And when profound rest for the bowel seems imperative, then stomach-washing is resorted to, preceded by cocaine to the pharynx, and the complete Ochsner treatment, plus the sand-bag, is carried out. It seems to be quite generally admitted that patients whose bowels are cleansed before operation convalesce better than those who are not purged. And it is quite proper to add here that many patients have gone home happy following the above procedure, without operation. After all, the reasons for debate concerning purgation hinge simply on three factors: first, the absorption of toxins and the probable consequent intestinal paresis; second, the transmigration of dangerous bacteria through the stretched wall of the colon; and, third, the question of whether the bowel is leaking or is about

to leak. Now, it is very clear that it is quite impossible when dealing with either or all of the foregoing conditions to formulate or prescribe any definite plan or procedure. There are no two patients exactly alike in every detail; hence it follows that supreme care in taking "stock" of the individual case, followed by most cautious judgment in the application of remedial invasion, is the proper attitude to cultivate.

When correct interpretation is made of nature's tangible expressions to rid itself of noxious material, the secret of successful therapy is disclosed. Crile³ has no doubt sounded the keynote in the application of kinetic theory to the subject of peritonitis. He says: "As infection is most readily spread and increased by movement, immobilization is the prime requirement in overcoming infection. Within the abdomen the immobilization is accomplished, first, by inhibition of the intestines; second, by distention of the intestines; third, by rigid and persistent contraction of the abdominal muscles; and, fourth, by the exudation of a sticky, glue-like material." Crile has proved experimentally that infection may produce changes in the brain, liver, and adrenals identical with changes produced in those organs from physical exertion and exhaustion. Crile further says: "Not only is the conversion of energy excessive in cases of peritonitis, but, as we have stated already, the intake of energy in the form of food fails, so that the stores of energy are depleted with great rapidity, while the action of the kinetic system is still further impaired by the loss of water equilibrium."

It is the purpose, therefore, in battling with infection, constantly to carry out the following tactics: rest, which means conservation of energy; repair, which means reconstruction of the damaged organ; and renovation, which means keeping up the water equilibrium, and all else that may be wisely done with water.

The skin is prepared with twenty per cent iodine solution in benzol. The surplus is removed with gauze moistened with alcohol. The incision is made in the most advantageous site. Before opening the peritoneum the tissues are bathed in two per cent aqueous solution of iodine. The head is now elevated, and nurses are ready with pitchers of twice sterilized plain water, or one-half strength normal salt solution. The peritoneum is handled with greatest respect. Sir Berkley Moynihan's warning, "Handle the peri-

toneum and intestines as though they were your own," is religiously carried out. The danger-zone is gently surrounded with a cordon of moist gauze. Next the fingers of the left hand identify and survey; the pitchers of solution ready the while instantly to wash away in broad stream the first appearance of pus. Dr. Van Buren Knott's⁴ teaching is followed, and all reasonable effort is made to remove the appendix and debris. However, it must not be denied that there are limitations in all things, but in this series the appendix was removed in all cases. Dr. Knott reports 501 cases with but 6 deaths. Fortunately, the appendix can and should be removed in the vast majority of cases. In 3 cases a portion of the cecum was removed because of gangrene. No effort is made to save any portion of the damaged cecum or appendix. There has been some talk about saving the base of the appendix; but there has been more talk about getting rid of the entire colon. The stump is ligated with chromic suture and buried within the cecum with a reinforcing linen purse-string suture after the manner of Dr. John F. Erdmann. This technic guards against "blow-outs" and prevents formation of a traumatic diverticulum, which has been pointed out by Dr. F. E. Bunts.⁵

The entire peritoneal cavity is now flushed with liberal quantity of saline solution. Whether the cavity is to be closed with or without drain, it is left filled with the solution. If the visceral peritoneum is intact, if there is no induration of the bowel, if the patient is protected with polymorphonuclear leukocytosis, and, finally, if his age is under thirty-five years, no drain whatever is used. When the abdominal cavity is filled with solution, intra-abdominal pressure is re-established. The intestines are suspended or floating, lymph-exudation is undisturbed, blood-pressure is elevated, elimination is hastened, and the good effects of the Murphy drip are accomplished in one stroke. But there are those who offer all manner of objections to flushing the peritoneum. C. A. R. Nitch,⁶ in reporting 30 cases of diffuse peritonitis, says lavage of the peritoneum causes degeneration of the protective phagocytes. If a phagocyte becomes degenerate in the presence of bland salt solution then that phagocyte is not living up to his reputation. Listen to what Dr. Robert Tuttle Morris⁷ says about washing the peritoneum: "I tried for about a year in appendicitis cases, with pus and peritonitis, the method of flushing the peritoneal cavity with saline solu-

tion and then closing without drainage. Primary union was obtained in many cases. None of the patients died, and none had increase of peritonitis." Morris did this work sometime ago, and his technic changes from time to time, but his advice to "let the peritoneum take care of itself" is immortal.

There is much to be gained by observing and studying a patient who is recovering from appendicitis without surgical aid. One is astonished sometimes with the extraordinary powers of the peritoneum. In referring to flushing of the peritoneum in these cases, Sir Berkley Moynihan⁸ says:

"It is worthy of note that the method above described does not meet with universal sanction. There are surgeons who do not use the method of flushing the peritoneal cavity, being content with incision and drainage; and there are others who follow Dr. Joseph Blake, of New York, in his practice of free irrigation of the peritoneum without drainage. Dr. Blake writes: 'I was formerly a warm advocate of abundant drainage; later I became convinced of the utter impossibility of draining every part of the peritoneal cavity, for it was evident that the drains were soon isolated by adhesions, so I next confined myself to the drainage of the field of operation, and then, perceiving that the other similarly affected regions of the peritoneum took care of themselves, I omitted drainage almost entirely, and employed it only when the presence of necrotic tissues or hemorrhage demanded it.'"

Moynihan further adds: "My own practice in these cases is to insure as far as possible cleansing by free lavage, free drainage and if need be by emptying of the intestine by interotomy or enterostomy."

Lavage of the peritoneum has been observed in many clinics in this country, it has been seen throughout the British Isles, it has been witnessed on the Continent, and always with good results. The washing must be liberal; gallons of solution should be used.

When drainage is employed a soft, light, half-inch tube is selected. It is split in spiral fashion, and the gauze wick is cuffed and tied with linen at the inner end for buffer purposes. The tube should go straight in, and have no kinks or curves. If the area to be drained lies beneath the upper angle of the wound, place the tube at the upper angle. After closing the peritoneum the tissues are again bathed in two per cent

solution iodine, and approximation is completed with a set of unsoiled instruments. Gauze dampened in two per cent formalin solution is the first layer of the dressing. When drainage is used the dressings are changed every hour during the first six hours. Pain is controlled with aspirin, phenacetin, or morphin. Cracked ice or water in sips is given just as soon as tolerated. If the ordeal was a severe tax, sodium bicarbonate is given to guard against acidosis. Dilute lemonade is given after twenty-four hours. Albumin water is given after twenty-four or thirty hours. Distention is overcome with lavage, eserine salicylate, and aluminum acetate per rectum. Castor oil is given on the third day.

Gratitude is hereby expressed to Dr. James Roane for his skill and guidance and assistance during times when death seemed to have the upper hand.

CONCLUSIONS

1. The people should be advised in public manner that all forms of appendicitis are fraught with serious danger.
2. Before operation, fear should be entirely routed, and hope firmly entrenched.
3. Crile's kinetic theory unmasks nature, and shows how to do battle for the peritoneum.
4. Ablution of the peritoneum is a life-saving measure. Leaving the cavity filled with dilute saline conduces to normal intra-abdominal status, and restores water equilibrium.
5. Drainage is not used when the visceral peritoneum is intact, when there is no infiltration, when the blood ratio is satisfactory, and when the patient is not older than thirty-five years.
6. Gradually increasing the weight of sand over the cecum is a rational measure.
7. The theory of the ice-bag in treating appendicitis, aside from the weight of the ice, is merely a theory.

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DISCUSSION

DR. B. A. BOBB (Mitchell): I have not very much to say except to commend Dr. Moore for the splendid way in which he has presented his paper, and to congratulate him on the great success he has achieved in

the sixty-five cases of grave appendicitis. His success has been greater than that I have had from the different methods used.

I have not looked up the subject of lavage of the peritoneum and the success following it, but I understand several of our authorities have resorted to it with success. When a man reports sixty-five cases of grave appendicitis in which there is pus in the appendix, even though it may be controlled by the omentum and walled off by dense adhesions, in which the appendix is gangrenous, and in which the ileum is involved for two or three feet and has to be removed, without impairing health afterward, he has certainly done wonderfully.

I did not have the time, after receiving a copy of the program, to look up and see how many cases of grave appendicitis I have had, but out of 2,000 cases I have seen I have had quite a number, and since Dr. Van Buren Knott read his paper several years ago in regard to the removal of the appendix in all cases where it was not walled off sufficiently, or entirely retrocecal and walled off, I have followed his procedure with about as good results as removing the appendix in every case. We know at the present time the removal of the appendix in every case is condemned by some of the best men, where the patient is already moribund when brought to the hospital, but since Dr. Knott commenced that and practices it, so have I, and I must say in a certain percentage of cases the patients have died.

Now, if this method which Dr. Moore outlined will save all of our cases, well and good; but we do not say that it will. He has had only sixty-five cases. When he gets up to a thousand or more, and reports as satisfactory results as he has today, the method will be worth considering. But I do not believe with a larger series of cases he will have so successful results. I believe he has been more fortunate than some of us.

Relative to using the sand-bag: I was glad to learn of that. I never heard of it before. There may be something to it on account of the quietus it puts on the bowel the same as giving morphin or in having an ice-bag applied. I had supposed the ice-bag had something to do with the quieting down of the circulation in the local parts after it had been applied sometime. Maybe it is just its mechanical effect that does the work.

In regard to giving physic: I agree with him thor-

oughly there. In cases not too grave he gave castor oil or when he knew he got the consent of the patient to operate. I never give it even when I am going to operate.

Relative to drainage: I use a straight tube cut spirally through with gauze in that. I have been in the habit of putting in two tubes, one where the appendix was, near the cecum, and the other run down into the pelvis, and the patient put in the Fowler position and started with the Murphy drip.

DR. H. J. BARTRON (Watertown): I have enjoyed the paper of Dr. Moore very much, because he has brought out points with which I am not familiar.

I wish to base my discussion of this paper on ninety-two cases of suppurative appendicitis in which drainage was necessary in all cases, and we were fortunate enough to lose but one case. I do not offer this in a spirit of bragging at all, but to support the technic I would like to tell you about. We always drain where there is pus. I am in doubt about irrigating the peritoneal cavity. I do not know whether it is beneficial or not. I have nothing to say particularly against it, but in this list of cases we never used it. We used two tubes, one going through the cul-de-sac and the other to the kidney, and then we used soft-rubber tissue going towards the liver. In some cases of less severity we omit that part of the drainage. The patient is taken to bed, placed well to the right side, and kept there day and night. The patient is kept there until practically all drainage ceases. This will cover a period of perhaps from three to six weeks on an average. All of these ninety-two cases I have collected have had free pus. Many of them have had general peritonitis involving the entire abdominal cavity. Some of them have had fecal vomiting following anywhere from one to three days, not all preceding the operation, but this complication coming afterwards.

I want to commend the doctor for presenting such an admirable paper and for having brought out many new features; but at the same time, I want to emphasize the technic I have mentioned, for it has given us such excellent results in such a large number of very serious cases.

DR. MOORE (closing): After the learned and kindly discussion to which we have just listened, it seems hardly appropriate for me to continue the discussion further. Especially is this true since my attitude is amply confirmed by the context of the discussion.

INFANTILE PYLORIC STENOSIS NECESSITATIS

BY J. T. LELAND, M. D.

HERMAN, MINNESOTA

Stenoses with palpable tumor, not evident until reduced tissue-turgor borders well upon emaciation, may well be considered spasmodic.

To declare pyloric spasm, or stenosis, in the infant a compensatory act (the retaliation or rebuke of a deranged motor activity) would not be contrary to the physiology of gastric motor demeanor in its disposal of stomach contents.

Alvarez has shown that the rhythmic activity

of the stomach differs in its various strips of muscles, the lesser curvature muscle, and more especially those of the pyloric ring, having a faster and more regular rhythm than the muscles of the greater curvature. He has shown also that the latent period for faradic, galvanic, and mechanical stimuli is shortest around the cardia and along the lesser curvature, the greater curvature and fundus being less irritable and often

fail to react at all, while the pyloric ring is more irritable and reacts more promptly than does the rest of the antrum.

Cannon has shown that the pyloric ring remains open with acid duodenal contents, and closed with alkaline.

We may therefore state that infants who suffer gastric motor arrhythmia develop pyloric spasm, (hypertrophy) in direct ratio to reflex fundus stimulation; in other words, as the pyloric-ring irritation appeals to fundus stimuli, so have we stenosis.

As the lesser curvature is the remnant of the primitive intestinal tube, with its greater activity culminating at the pylorus, it is not surprising that congenital defects involving the pyloric ring may make excessive demands upon the less appreciative fundus; and we have, in consequence, the typical fundus attack of clinical congenital stenosis. If we can conceive of the passage of chyme in minute quantities through a stenosed pylorus, not repelled because of too insistent fundus-propulsion, we will appreciate, as evidenced in the objective symptoms of obstruction, that fundus-control, and not the pyloric ring, demands our attention, even though the subsequent hypertrophy, magnified by extreme emaciation, intensifies its claim.

Infants who develop under such a handicap complete this syndrome, in which the fundus attack is pathognomonic, by their characteristic attitude of both mind and body,—that is, while they are deficient as to tissue-turgor they are contented, so much so that the picture of contentment, framed as it is in extreme emaciation, is almost uncanny, and this, together with constipation and propulsive vomiting, depicts pyloric retaliation as truly as emaciation with fretfulness, bleeding gums, and tender joints spells scurvy.

A contented infant with propulsive vomiting whose exposed abdomen reveals the turgescient fundus, should at once emphasize the importance of gastric relaxation, in order that the milk curds may cease in their nagging ineffectual attempt to force pyloric passage. This relaxation is brought to the maximum, first, by introducing

food congenial in quality and quantity; and, second, by maintaining therapeutic relaxation of the gastric muscles with tincture of belladonna; and, third, by discouraging the "fundus attack" by the application of a soft, snugly fitting, abdominal pad, producing the advantages of the prone position, which is so beneficial in acute gastric dilatation, without being compelled to lay the infant face down. This end is accomplished as follows:

1. By breast-feeding, if possible, at two hour intervals. If artificial, cow's milk, boiled, with no attempt at fat-reduction, nor must we be too solicitous to reduce the natural gastric acidity by the addition of excessive alkalies.

2. By giving tincture of belladonna (gtt. iii-v) three times a day, the dosage depending on the condition of the infant.

3. By the application of a pad made of cotton and wool and covered with flannel, in size, five inches long, three inches wide, and two inches thick, to the infant's abdomen with adhesive plaster (2 inches wide). This pad is large and soft, and must be applied with unmistakable firmness, for its function is compression, supplying the support which an empty and relaxed colon, sagged by deficient adipose, is incapable of.

SUMMARY

1. An irritable pyloric ring nagging the fundus into over-active propulsion may result in spasmodic stenosis, which, if continued, leads to hypertrophy.

2. Infants so affected present the following syndrome: deficient tissue-turgor, propulsive vomiting, constipation, contentment, and the fundus-turgescence which culminates in the typical "fundus attack" so clearly observed upon inspection.

3. The production of gastric relaxation, both therapeutically and mechanically, is conducive of maximum results in the conduction of chyme through the irritable pylorus.

4. The abdominal pad, large and soft, firmly applied, stills the insistent fundus by its likened action to the normally distended colon supported by proportionate tissue-turgor.

OPPORTUNITIES FOR SPECIAL WORK IN OBSTETRICS IN
NEW YORK CITY

By A. C. TANNER, M. D.

ST. LOUIS PARK, MINN.

It is only in the last half-dozen years that the practice of obstetrics has come into its own as a specialty in medicine. In this country it seems to have been the Munsey articles on the Freiberg "twilight sleep" that aroused the masses of the people to demand a better and a more scientific management of labor, the prenatal state, and the post-partum period. The day of the old-woman practical midwife is all but passed, and so is that of its haphazard, careless, and unclean counterpart, which often went by the name of "doctor." Ever more and more the prospective mother is insisting that she be spared all of the long tedium of the pain and the torture of labor that is comparable with a strong and healthy baby and a normal puerperium. She is also demanding that she shall pass through the entire period of pregnancy, from conception to complete and final recovery, with a minimum of inconvenience and the least possible amount of danger. And the demand is a just and reasonable, not to say a humane, right and privilege, and the man who would be in the race for obstetrical work must take heed. He must keep up with the times, must study and practice all of the accepted ways and means of alleviating the suffering and the inconvenience of pregnancy and labor, and must be familiar with all the methods and procedures of guarding against injuries or infections to both mother and child. He must, from time to time, go out into the world and see how the leaders in the great centers of population are meeting the problems that confront him, as well as them.

Now, the question that comes up is, where to go and how to get the best work and the most in any given time. I have just returned from doing nearly a year and a half in obstetrical work in the New York hospitals, and will describe the work done in that city. Perhaps I may be able to save some fellow-seeker after truth the mistakes that I made while learning the ways of New York, or that I have seen other strangers make and be sorry for.

A man can get almost anything he is looking for in the hospitals and dispensaries of New York City—that is, he can if he knows where it is to be had or where to go to find it. There are a dozen or more hospitals which offer mater-

nity work to the man who is willing to do it. There are staff positions, and student and post-graduate courses. Staff or interne work offers, to my notion, by far the most for the time and the money spent in the work. Most of the terms of service are short—three to six months. Some of these services are very active, giving one all that he can possibly do, while others are no better than one can get in other cities in the country. But none are really bad, and all are worth while. And to one who is really desirous of learning how to do scientific work in midwifery I would recommend a service at one of them. Take one even if you cannot spare time to finish it, and so get in among those who are doing the work, and by doing the work, learn how to do it well. Watching another fellow do brilliant work never develops manual dexterity, nor keenness of tactile sense, nor good judgment. One who thinks there is nothing to learn from even handling so-called normal obstetrical cases has long since passed the stage where postgraduate study will do him any real good. There are very few cases of pregnancy that run a course from conception to final and complete recovery without showing some distinctly pathological condition, and it is up to us as competent accoucheurs to be able to recognize these abnormal conditions, and meet them while they are yet amenable to treatment and care.

The Lying-In Hospital of New York requires continually from fifteen to twenty staff men, as house surgeons and assistant house surgeons, to care for its over nine thousand confinements each year. About thirty-five hundred of these cases are cared for in the hospital by the two attending staffs, headed by Drs. J. W. Markoe and A. B. Davis, and two house surgeons, one for each division, and four assisting house surgeons. Every member of the interne house staff gets all that he can possibly do. The Out-Patient Department is superintended by the younger men of the respective attending staff divisions, alternating every two months, and directly cared for by one house surgeon, and a dozen or more assistant house surgeons. The outside assistant house surgeons usually get an opportunity to assist on the floors of the hospital a month if they wish to. The house surgeons

are appointed by the chiefs of staff or the superintendent of the Hospital, while the assistants are usually appointed following an examination in obstetrics only. However, there are seldom enough who take the examination given quarterly, not to mention those who drop out after securing an appointment, not to leave a good many places to be filled by appointment; and these appointments may be secured by corresponding with the superintendent of the Hospital. All men, while on service, receive board, a good room, and laundry, and the outside men receive twenty-five dollars a month to cover carfare and incidentals.

The outside work is hard, but it is the service in which a man really learns obstetrics. He makes rigid ante-partum examinations in the hospital, or at the sub-station at 314 Broom Street, located in the very midst of the lower East Side; or he goes out and conducts labors in the homes, making a complete diagnosis of the position of the fetus and the condition of mother and child, sending to the Hospital two-hourly reports of progress. Each man gets from thirty to forty or more confinements a month. In addition, he has to make daily post-partum calls, thus following up his patients. He also has the full privilege of clinics, and demonstrations, and ward-rounds of the Hospital, thereby continually being able to check up his methods by the technic and procedure of the Hospital. The men on the floors assist at operations and conduct most of the deliveries by themselves. Occasionally one is able to secure an appointment directly to the inside service without first having served on the outside. Sometimes these floor appointments may be secured by writing directly to the heads of the divisions, but more often by addressing the superintendent, as with the other staff places.

Besides positions on the staff as house surgeons or assistant house surgeons, the Lying-In Hospital offers courses to graduates in medicine in which they are said to get opportunity to do real work, but which consists mostly in looking on. During one month, as a postgraduate student, I was never permitted to conduct a labor, and made only one vaginal examination; but as assistant house surgeon I got well over two hundred deliveries, among them a number of forceps and breeches. Also I got an opportunity to make over two thousand complete examinations.

Finally, there is a student course offered to

undergraduates, which is taken by a good many graduates who want to really get their hands into the work. The course is three weeks long and costs twenty dollars, which includes room rent. The postgraduate course costs twenty dollars a week for the first two weeks with an extra fee of two dollars for the diploma, while that of the undergraduate is included in the twenty. The first week of this course is spent on the floors watching cases, as do the postgraduates. The second is divided into making ante-partum examinations, post-partum calls, and watching and assisting at deliveries in the homes. The third, or last, week the student conducts deliveries by himself, and sends into the Hospital two-hourly reports, as do the staff men. I consider this an excellent short course, and well worth going to New York to take.

Next after the Lying-In Hospital, in my estimation, for the number of opportunities to do real work, comes the Manhattan Maternity. Drs. Flint and Edgars are the chiefs of a rotating service. Instead of a house surgeon there is a salaried long-time resident. The assistants are appointed without examination, and serve for three months, putting in two or three weeks alternately in the Hospital and in the Out-Patient Department. A diploma is given at the end of the service. It takes from eight to ten men to handle this work, thereby meaning about two open places a month. Here, also, is given an undergraduate course, which some say is as good as, or better than, that given at the Lying-In Hospital, and it costs only ten dollars.

At the New York Nursery and Child's Hospital a similar combination of services is conducted. This is a rapidly growing institution. Here, also, one may secure appointments on the children's side, and do work in pediatrics. The assistant resident serves from four to six months, and gets good work. It takes four men to handle the obstetrical work in this hospital.

Higher up on Manhattan Island is Hill's Maternity. This furnishes wholly out-patient services. Appointments are said not to be hard to secure, and are for four months. I have heard that one can get here all the work that he can do; but I have not seen much of its work. Dr. Hill, its chief, has a very good reputation.

Besides these combined outside and hospital or wholly outside services there are several good services which are strictly hospital. Several of these, as the Fordham Hospital and Harlem Hospital, as well as Bellevue Hospital itself,

are a part of the city or Bellevue Hospital service. And one can often get an appointment to these hospitals, and they are well worth while.

In this class of strictly hospital service comes Sloane Hospital, with Dr. E. B. Cragen as its chief of staff and Drs. Vorhees and Ryder as his assistants on the obstetrical side. There is here a salaried resident appointed for a period of two years, who is also an instructor in the University of Columbia Medical School, and four assistant residents. The assistant residents serve for four months, one month as junior and three months as senior, passing from second day to first day, and finally night senior, during which time the work varies and increases in complexity as one gets older in the services. The hospital accommodates some two thousand cases a year in its obstetrical services alone, and is always crowded. The ante-partum work is well looked after, a blood-pressure and a urine analysis being done on every patient every time she comes; and she is brought in every month until the last six weeks, and every two weeks or ten days after that. Her history is carefully taken and gone into, and abnormalities searched for. In case of previous toxemias she is even brought into the wards and looked after. Also in case of habitual large babies or babies with very large or hard heads, bags are often introduced and labor induced two or three weeks ahead of the time for delivery.

The services here are strictly by appointment, there being one opening a month, and are usually obtained only after a personal interview with Dr. Cragen. I count myself very fortunate in having secured one of these appointments. Here I made over another two thousand ante-partum and inter-partum examinations, and conducted over two hundred deliveries, among which were forty forceps and a dozen breeches and many Vorhees bag introductions. I also saw and helped to care for some forty or fifty cases of toxemia of pregnancy, as well as looked after several premature births. The Hospital is an integral part of the University of Columbia Medical College teaching plant, and one is per-

mitted to do a lot of demonstrating to students. The students here get one of the very best courses I have ever seen given undergraduates; and they get the Sloane technic, which is wonderfully effective and yet so simple that it can be transported bodily into any private home.

During the summer vacation the Hospital, through the Medical Department of the University of Columbia, gives a three weeks' course to practitioners at a cost of forty-five dollars. This fee also includes rooms in the Hospital. If one goes there with an open mind and with a willingness to work, I do not know where he can get more of what is really worth while and of a fuller value for his money. A friend of mine, as well as former classmates, came in and took the course while I was there, and got twenty-five deliveries each and other work in comparison. My friend was so completely taken up with the place that he went home and arranged his practice so that he could leave longer, and he is back there now for a full four months' staff appointment.

Before closing, I must not forget to mention that there is good work to be had in Dr. P. O. Polak's Clinic at the Long Island College Hospital. It is said that Dr. Polak is a great teacher. There are other and smaller obstetrical services, but I can't say much of them from first-hand knowledge, as most of my time was taken up at the Lying-In and the Sloane Hospitals. The Post-Graduate Hospital has discontinued its department in this line, though it continues to give manikin and cadaver work. The Polyclinic has no obstetrical department in its hospital. Hoping that this outline of what is to be had in practical work in obstetrics in the greatest city in America, may find its way to some seeker after light, and that it redound to the ultimate alleviation of some of the suffering and invalidism of humanity, I will close by saying that staff interpositions offer most and are not hard to secure, evidenced by the fact that I held two very good ones in succession. Undergraduate courses, excepting the practitioner's work at Sloane, come next, while graduate courses consist mostly of merely looking on.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

W. A. JONES, M.D., EDITOR

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

FEBRUARY 15, 1917

"FAMILY LIMITATIONS" BY BIRTH-CONTROL

A pamphlet entitled "Family Limitations," by Margaret H. Sanger, is the pamphlet that has caused so much discussion relative to birth-control; and, in view of its circulation, it may not be out of place to record the fact that the newspapers have detailed the account of Mrs. Sanger's arrest, and her imprisonment for thirty days, for the circulation of the pamphlet, as well as for clinics that she conducted in New York and Brooklyn. The pamphlet is by far one of the plainest and broadest pamphlets that has ever been circulated, and a quack who undertook to distribute such literature would probably be promptly arrested. A few years ago a physician of Minneapolis wrote a book on sexual problems dealing with birth-control. His book was confiscated, he was arrested, tried for the dissemination of obscene literature, and was sentenced to the penitentiary for one year. Mrs. Sanger, however, gets off with thirty days, which is too short a sentence considering the advice that she gives women in her clinics and through her pamphlet.

The book starts out with an introduction which is very appealing to many women, and particularly that class of women who do not de-

sire children and who use all of the means they know of, including abstinence, to prevent having children.

Mrs. Sanger goes into the subject under a chapter headed "A Nurse's Advice to Women," and starts out with the statement, "Don't wait to see if you DO NOT menstruate, but make it your duty to see that you DO." She urges women to take laxatives four days before the next menstrual period, and if there is the slightest possibility or suspicion of a pregnancy, she urges them to take from five to ten grains of quinine, and states that the quinine will operate in from four to six days, but, if a longer time elapses and the flow is not brought on, then the only remedy is an abortion; and she further says that women should not allow a pregnancy to run over a month. This latter advice concerning an abortion and the time for it, is not only unsound and unscientific, but is distinctly bad advice, for every physician knows that the pregnant woman is in such a condition that in the formative period the fetus is attached to the uterine walls, and consequently nothing short of a curettage will relieve the pregnancy. Every physician knows, too, if an abortion is to be performed for justifiable reasons, that the safe period is at the end of the third month when the membranes have become detached and the sack is practically completed.

This so-called nurse also goes on to give various opinions as to the time that intercourse should occur, but warns the woman against depending upon any time as being actually safe. This is a true statement. But the writer insists that some preventive should be employed, and starts out with the suggestion that "coitus interruptus," or withdrawal, is a safe procedure for the male, but she admits that it is unsatisfactory as a rule to the female, because her sexual act is not completed, and it leaves her in a state of congestion. Then she deals with douches and their importance, all of which is acceptable as a rule, but, when she attempts to assert that the introduction of the finger with the tube into the vagina is essential to thorough douching, she does not realize that she is laying a foundation for masturbation. She gives various remedies, such as lysol, bichloride, potassium permanganate, chinosol, salt solution, vinegar solution, and the cold-water douche.

She then passes on to the use of the condom for the male organ, and evidently approves of this method, for she cites prices and describes

the condom with careful accuracy. She next takes up the pessary and sponge, and refers to the French pessary, which is formed by an inflated rubber ring and a loose cap to which is attached a string for removal purposes. She then dilates upon the use of sponges, which is an old-time method, filthy and dirty in practice and should not be used under any circumstances. She is all the time, however, insisting upon the douche, either before or after, or both.

Her next paragraph is devoted to vaginal suppositories, composed of all kinds of drugs that are supposed to neutralize the male sperm. She does not hesitate to suggest a patent remedy manufactured by a patent medicine company, and she winds up this sixteen-page pamphlet by personally recommending to every woman that she use a well-fitted pessary and learn to adjust it.

This sort of literature scattered through the country, as this has been, is distinctly bad and will do more harm to young people or to people of loose morals than anything that has come to the attention of the editor. The pamphlet is decidedly objectionable; it is not educational, and it is questionable whether the poorer classes to whom it is supposed to be addressed can afford to employ the various means that Mrs. Sanger has suggested.

She fails to dwell upon the principal element in birth-control,—that is, the education of the man,—for, if he understood the situation and was properly advised by a physician, there would be no need for dissemination of unscientific and indecent literature. It seems improbable that anything of this sort can control, in any measure, the births of the country. Professor Robert J. Sprague, who holds the chair of Economics and Sociology in the Massachusetts Agricultural College, recently contributed to the *Journal of Heredity*, an article that is really scientific and educational. He suggests birth-release among the wealthy classes and fewer births among the poorer classes, in order that the former may bring up children because they have the means, while among the poorer classes some general problem of education should be advocated; but he does not in any way suggest means of prevention or means to prevent conception. He believes that birth-release among the upper classes is a greater necessity, not only for their own welfare, but for the salvation of the nation. He cites, too, the indigestible foreign elements which are poorly adapted to American life, which weaken patriotism and bring about a mixture of races which

makes for confusion of morals, a dearth of art and literature, and conflicts between classes. He admits that birth-control is a very serious problem, but that race suicide is a racial menace and threatens to defeat the highest ideals of the nation. From his point of view America needs smaller families, but better families, so that the quality shall be higher and the poverty element somewhat eliminated. Birth-control, however, is not the only important factor, and, rather than advocate birth-control when race-suicide is so prevalent, he thinks it would be safer to let the birth-control proposition take care of itself.

If some way could be devised for the prevention of large families among poverty-stricken people, particularly of foreign countries, it might be an element of progress, but it is a very difficult problem to handle, and almost impossible to solve.

LEGISLATION IN PUBLIC HEALTH MATTERS

The time has come again when all physicians should manifest a lively interest in state legislation, and especially that which is now under way in Minnesota, particularly in regard to health measures. We have all been informed by the newspapers that the Economy and Efficiency Commission, as well as the special health commission appointed by the Governor, have been very active in the presentation of reformatory bills governing public welfare, and particularly the State Board of Health. It is proposed to reorganize the State Board of Health on a new basis, and to that end the Governor may appoint an entirely new board, including the recommendation of the Economy and Efficiency Commission that the executive officer of the Board shall be an appointee of the Governor. This means that the Board of Health may be made political, and dependent upon the political changes which occur every two or four years. Of course, we may be needlessly uneasy about this situation, and it is quite possible that the Governor will be extremely careful in the work of new appointments or reorganization of the Board, for the reason that it is generally admitted that the State Board of Health of Minnesota is looked upon as one of the most progressive and up-to-date boards in the United States, that it is constructive and progressive, and is satisfactory to all but a few who, without knowledge of the situation, are prejudiced against the work of the Board. Men who have made surveys in various

states, including Minnesota, and who are familiar with the situation in Minnesota, have agreed that the Board of Health in this state is among the leaders, and ranks next to the boards in the densely populated and rich states of this country. It is rated as fourth in efficiency, and stands very much lower in the point of expenditures. Fortunately, we have a Governor who is interested in public health, and he has urged in his message, and particularly in the budget which was presented to him, that the State Board of Health be given a much larger sum than has been awarded it in the past. Public hearings have been held in which the committees have heard from representatives of the State Board of Health, and others interested in public health work, and it is to be hoped that every physician in the state will make a reasonable endeavor to get in touch with his representative or senator, and urge that this Board be left as it is and without change of any kind for at least two years, in order that they may try out their work with the increased appropriation suggested by the Governor.

At the present time everyone is considered a self-appointed reformer, and all sorts of ideas are promulgated as to efficiency in methods; but with the State Board of Health there is really no need for any revolution or reorganization in its make-up or in its work. It has proven itself efficient and economical, and it has lived absolutely within its appropriations. It has, however, cut off many educational efforts and has dismissed some well-tried and experienced employees. THE JOURNAL-LANCET is particularly anxious that the doctors of this state should take a more active interest in the matter.

Senator Andrews of Mankato and Senator Hilbert of Melrose are the two physicians on the Public Health Committee in the Senate. They have been handicapped by the flood of bills that have been presented, and they are confessedly unequal to the task of watching everything that comes in, and they have therefore appealed to the physicians to assist them in some of their endeavors. Unless this is done, and done at once, there may come a disaster to the Board.

NEWS ITEMS

Dr. J. A. Roy, of St. Paul, has moved to Kensington.

Dr. G. Kvitrud, of Grasston, has moved to St. Paul.

Dr. C. M. Campbell has moved from Bricelyn to Decorah, Iowa.

Dr. T. W. Hovorka, formerly of Albany, has located at St. Cloud.

Dr. G. H. Crary, of Fingal, N. D., has moved to Great Falls, Mont.

Dr. J. F. Bowers, of Gully, has purchased a practice at Wausau, Wis.

Dr. T. J. Strong, of Williston, N. D., is taking postgraduate work in Chicago and eastern cities.

Buena Vista, Wabasha County's tuberculosis sanatorium, was opened to the public on February 1.

Five nurses graduated from the training-school of St. Mary's Hospital of Duluth on February 2.

The women of North Dakota are determined to have a county nurse employed by every county in the state.

Dr. H. B. Ewens, of Virginia, has joined the hospital corps of the Canadian military forces at Toronto, Canada.

Dr. Justus Ohage, Jr., of St. Paul, who has been in Europe for a year doing Red Cross work, is expected home soon.

Dr. Alexander Barclay, a resident of Cloquet for the past nine years, has purchased a hospital in Coeur d'Alene, Idaho.

The Hennepin County Medical Society has unanimously endorsed a bill for the reorganization of the Minneapolis health department.

Dr. E. W. Johnson, of Bemidji, has become assistant surgeon for the Minnesota naval militia. Dr. F. J. Patton, of Duluth, is the chief surgeon.

Dr. G. A. Steele, of Havana, N. D., died of consumption the 10th of January at Colorado Springs, Colo., where he had gone for the winter.

At the opening of the new Barnesville Hospital last month every visitor brought a useful article to the hospital. The precedent is a good one.

The nine lepers in Minnesota will hereafter receive the best of care, as Congress has made an appropriation to build and maintain a leprosarium.

An attempt will be made to pass a bill this winter in the Minnesota state legislature to license and regulate lying-in and maternity places or hospitals.

Dr. T. C. Anderson, of Volin, S. D., has passed the examinations for United States naval physi-

cian, and will report for duty in Washington February 12.

Dr. A. M. Aanes, formerly of Red Wing but of late of Clermont, Iowa, has returned to Red Wing and joined the staff of Drs. Cremer, Claydon, & McGuigan.

Dr. H. H. Healy, of Grand Forks, N. D., is doing the University dispensary work of the University of North Dakota during the absence of Dr. J. Grassick, who is in Florida.

The lower house of the North Dakota legislature passed a bill *unanimously*, and, what is more extraordinary, it was a pure-food bill in the form of provision for a North Dakota "trade-mark."

The Medical Department of the University of North Dakota has raised its standard in pre-medical work, for the purpose of improving the quality of its students and limiting the number admitted.

Dr. A. J. Paulson, of Thief River Falls, has become associated with Dr. A. O. Arneson, of McVile, N. D. Dr. Paulson becomes the hospital surgeon of the new Community Hospital at McVile.

An industrial camp near St. Paul discontinued safe well-water for river water to save fifty cents a day. Typhoid followed, and now several men from the camp are in the St. Paul City Hospital with typhoid.

Dr. Justus Ohage, Health Commissioner of St. Paul, will ask the Minnesota legislature for better pure-food laws. He wants eggs labeled, and also wants their stay in cold storage limited to thirty days.

Dr. J. M. Duff, health officer, of Madison, S. D., says because of improved sanitation and closer observance of health conditions in that city there have been no cases of contagious diseases in the city.

Dr. A. W. Giddings, of Anoka, died at his home February 4 at the age of 86. Dr. Giddings graduated in New York in '54 and came at once to Minnesota. He has not been in active practice for the last thirteen years, but for fifty years he was engaged in medical practice.

There will be many more county nurses at work in Minnesota and other Northwestern states this year than ever before. The sale of Red Cross seals and an aroused public sentiment in favor of preventive health work account for this improvement.

A country physician says the Stevens' bill now before Minnesota legislature should be boosted

by medical men. It requires that bob-sleighs be built the same width as automobiles in order to keep the snow tracks on country roads a uniform width.

At the annual meeting of the Aberdeen District Medical Society of South Dakota, held in Aberdeen last month, the following officers were elected: President, Dr. R. L. Murdy, Aberdeen; vice-president, Dr. V. M. Miller, Mellette; secretary, Dr. F. J. Kraushaar, Aberdeen; treasurer, Dr. J. E. Bruner, Frederick. After the banquet papers were read by Dr. Peabody, of Webster; Dr. Quigley, of Omaha, Neb.; Dr. Cross, of Minneapolis; Drs. Bonney and Stevens, of Aberdeen; and Dr. Campbell, of Minneapolis.

The plan of the Hennepin County Medical Society for giving notice to physicians visiting Minneapolis where they may see surgical operations, is certain to be a success and to confer a great benefit upon visiting physicians. Some of the notices on the Society's bulletin board are permanent and some change from day to day. The board, as stated in our last issue, is hung in the open hall of the Society's assembly-room in the Donaldson medical building and can be consulted at any hour, day or night.

PHYSICIAN WANTED

In a live town, 90 miles from Twin Cities; fine country; no other doctor. Fine chance for a good, young physician. The Commercial club will back the right man. Address 455, care of this office.

LOCUM TENENS WANTED

A physician registered in Minnesota, to fill a vacancy of assistant for eight weeks, beginning at once. Small mining town in Northern Minnesota. Hospital in connection. Address 444, care of this office.

PHYSICIAN WANTED

A doctor, young or middle aged, at Henry, S. D. Population, 500. Best farming country in the state. No opposition and eleven miles to nearest physician. Write at once. H. A. Sasse, Druggist, Henry, S. D.

BOOKS AND INSTRUMENTS FOR SALE

The medical library, consisting of 200 volumes, and a collection of surgical instruments belonging to the late Dr. J. B. Gould, of Minneapolis, are being disposed of and may be seen at 3217 Nicollet Ave. N. W. phone, South 383.

ASSOCIATE WANTED

A North Dakota physician on the main line of the Northern Pacific railway, having a \$9,000 unopposed general practice, wishes a German-speaking associate after April 1st on 50 per cent basis. Expects to turn over entire practice a year later, as he wishes to retire. Must be a first-class man and of good habits. Married man preferred. Address 453, care of this office.

STATIC MACHINE FOR SALE

One 24-plate static machine (Betz) in good condition. Cheap, if taken at once. Address D. Kalinoff, 308 E. Chestnut St., Stillwater.

PRACTICE FOR SALE

A \$5,000 practice for sale in a town of 500 in South Dakota. Here is a good opportunity for the right man. Address C. Estile, 610 East 7th Avenue, Mitchell, S. D.

WANTED: PRACTICE OR PARTNERSHIP IN MINNESOTA

Must pay \$3,600 cash a year and bear investigation. Town must have electric lights and waterworks. Place near Twin Cities or on Iron Range given preference. Write full particulars. Address 451, care of this office.

PRACTICE FOR SALE

An unopposed practice of \$4,500 in modern town of 500. High school, electric lights, sewerage, etc. Best farming section in southern Minnesota. Will sell modern residence with office, or practice only for nominal sum. Good opening for German or one speaking German. Address 454, care this office.

ASSISTANTSHIP TO A SURGEON WANTED

Assistantship wanted to surgeon, corporation, hospital, or general practitioner, by an experienced physician, who is a competent anesthetist and radiographer. Has had special training in obstetrics and emergency surgery. Has clean habits, good personality, best of references. Address 449, care of this office.

POSITION DESIRED

A recent graduate with excellent general education and good surgical training would like to associate himself with some physician or surgeon. Am Norwegian and speak both Norwegian and German. No objection to leaving city. Would consider buying a practice. Address 460, care of this office.

PRACTICE FOR SALE CHEAP IF TAKEN AT ONCE

Good practice in a town near Twin Cities with all modern improvements, and good roads year around. Office well equipped; fine X-ray and high-frequency coil. Will sell for less than invoice. Real estate optional. Address 458, care of this office.

SANATORIUM FOR SALE

Built over a sulphur water spring. Beautiful grounds facing lake and boulevard, thirty-five minutes by street car to center of Minneapolis. Will sell on terms or lease to experienced person who will co-operate with ten doctors now interested. \$2,000 will handle the deal. Address 457, care of this office.

ASSISTANT WANTED

An assistant at once, in a large general practice in eastern South Dakota. Chance for partnership later, if mutually agreeable. No equipment required. Give full particulars as to education, age, health, habits, family, nationality, church preference, experience in medical practice, and lowest acceptable cash salary. Address 463, care of this office.

OFFICE WORK OR SECRETARYSHIP WANTED

Young lady with large experience in medical work wants position of responsibility. Has had several years' experience in reporting operations in the operating-room of a large hospital. Highest references given. Address 464, care of this office.

PRACTICE FOR SALE

On account of the death of a physician, a first-class practice is open for the right man; German and English-speaking people; 40 miles from Minneapolis; richest country in the state outside of cities; x-ray machine, instruments, drugs and complete office equipment for sale very cheap; immediate possession. Address 461, care of this office.

MINNEAPOLIS LOCATION OFFERED

I have a suite of two rooms suitable for a physician in a modern building, with heat, light, and janitor service, for \$18.00 per month. This building located on Fourth Street at Fourteenth Ave. S. E., Minneapolis, is only one block from the University, and is in the largest out-lying district in the city, with very little competition. A fine location for a young man. Address A. E. Simms, 331 14th Ave. S. E., Minneapolis.

PRACTICE FOR SALE

In North Dakota, \$5,000 practice and modern residence. Railroad town of 800. Good schools, churches, roads, territory, and pay. One competitor. Competent man can make price asked in one year. I did so. Price, \$3,300. Ford roadster, optional. Office equipment included in above price. Address 452, care of this office.

POSITION IN A PHYSICIAN'S OFFICE WANTED

A fine stenographer with six years' experience in a physician's office and as assistant, desires to become permanently associated with a physician in Minneapolis having a large practice. Can give good references. Address 448, care of this office.

SANITARIUM FOR SALE

The Granger Sanitarium with greater possibilities has been used most for the Battle Creek system of sanitarium treatments. It is so adaptable that you can use it as you wish. It has about twenty-five rooms, and is located in a business block in the down town district of Aberdeen, S. D., a city of 15,000, without a similar institution in the 30,000 square miles of surrounding rich farming territory. \$1,000 will swing the deal. Particulars, description of lease, and a copy of the inventory upon request to John Granger, 135 Auditorium, Minneapolis, Minn. No use of our wasting correspondence, so state the nature of your proposed work, and I will give you my opinion of your probable success.

DOCTOR

Doctor: If you want practical postgraduate work during the fine season in the delightful city, write for particulars. Thirtieth annual session opens September 25, 1916, and closes June 9, 1917. New Orleans Polyclinic, P. O. Drawer 770, Graduate School of Medicine, Tulane University of Louisiana.

PUBLISHER'S DEPARTMENT

MELLIN'S FOOD

This food is known to medical men as one of the best foods ever offered as a substitute for mother's milk and for children who have been weaned at the normal time.

The Company claim that it is not only a scientific composition for the purposes above named, but that it also assists in correcting the constipation of infants.

The claims of the manufacturers are based upon its composition as a food, and not upon any form of medication.

THE SMOOTH-RUNNING MOTOR

Polarine is, beyond doubt, the most efficient friction-reducer among automobile oils on the market. It possesses so many points of excellence that the user of an automobile not familiar with it is taxing his patience without need of it, and incurring unnecessary expense by using inferior oils. It is almost indispensable in a cold climate like that of the Northwest, for it flows as well in zero temperature as on the hottest day of summer.

The Standard Oil Company makes it, and guarantees it as the best.

THE JEWELL NURSERY

The Jewell Nursery, of Lake City, Minn., will celebrate its fiftieth anniversary next year, and it may well be proud of its record. It has 1,500 acres devoted to the cultivation of trees, shrubbery, small fruits, etc., and it has literally covered the whole Northwest with its product; and in all its dealings it has maintained a reputation for honesty, in both small and great things, that one, somehow, thinks can never be separated from this kind of business, but, alas, it is, and to the sorrow of many.

The Jewell Nursery will treat you handsomely if you give it a small or a large order. Ask for its catalogue.

STANOLIND LIQUID PARAFFIN

Stanolind Liquid Paraffin is a very simple and a perfectly ethical product, the claims for which are based upon reason and experience. It seems so clearly adapted to certain stomach conditions, which we know to be obstinate, that it is worthy a trial by every physician. It lubricates the intestinal canal and prevents an excessive absorption of water, thus producing curative conditions in constipation, auto-intoxication, etc.

It is highly recommended in diabetes and chronic gastritis. The Standard Oil Company, 72 W. Adams St., Chicago, will send, free, samples and information to any physician.

THE MUDCURA SANITARIUM

If any physician does not know, or has forgotten, that sulphur-mud packs and sulphur-water baths, with massage and electrical treatment, are given in the winter, as well as in the summer, and in a high-grade ethically conducted institution near the Twin Cities, we want to remind all such practitioners that Dr. H. P. Fischer, of Shakopee, Minn., is at the head of such an

institution, and that his work is so uniformly satisfactory that not once in a hundred times will a physician regret sending a patient to the Mudcura Sanitarium.

If rest and perfect elimination with massage and electrical treatment are indicated in any case any of our readers may have, there will be little risk in sending such patient to Dr. Fischer's sanitarium. This treatment is not claimed to be a cure for all kinds of diseases, but in skin diseases and in rheumatism it often does wonders.

THE POTTENGER SANATORIUM

Probably at no other season of the year will a patient with severe lung or throat disease get better results than now from a change from our cold climate to California; and no other place in California is quite equal to the beautiful foot-hills in which the Pottenger Sanatorium is located.

It may also be added that no man, either at home or abroad, bears a higher reputation as a specialist in lung and throat diseases than Dr. Pottenger, the medical director of this institution.

Facts, long known and undisputed, justify these strong and assuring statements.

IOCAMFEN

Messrs. Schering & Glatz are manufacturers of so high standing that their claims for any new preparation put out by them command the utmost confidence of medical men; and so therefore their statements in regard to Iocamfen are interesting. It is the product of the interaction of iodine, camphor, and phenol, without the use of iodine solvents.

Its use is specifically in "first aid," minor surgery, gynecology, etc.; and it is so much superior to the tincture of iodine, it should be adopted in routine practice of the above character.

Any physician who will read the claims made for it, and try a sample bottle, will be pleased, we are sure, with it, and will adopt it for daily use.

NATIONAL PATHOLOGICAL LABORATORY

In the announcements made in our columns from time to time by the above Laboratory will be found the very extensive line of work wherein laboratory help is extended to the general practitioner; and, we are sure, the country practitioner who keeps well informed of the aid he can get from a scientific laboratory need never feel that he is not able to practice medicine on a plane just as high as that attainable in city practice.

The public laboratory has done a splendid work, but it is not yet fully appreciated. Our rapid mail service brings the city laboratory to the door of every practitioner, and the man not familiar with what he can do with such an assistant is far behind the times.

Our advice to every such man is to begin at once correspondence with the National Pathological Laboratory, 55 Wabash Ave., Chicago. Ask its management for information whenever you are in trouble with a case.

THE STANDARD MEDICAL SUPPLY COMPANY

When a new business enterprise reaches the end of its first year, a survey of its hopes, its dreams, and its accomplishment is made. As the above-named company finds its customers mainly among physicians, and as customers must be made friends or put on a very

friendly footing, that they may remain customers, the readers of THE JOURNAL-LANCET may be interested in this survey.

The Company began its organization about a year ago, and three months passed before it was ready to begin business with any promise of prompt service. It found a building almost ready for occupancy and as well adapted to its work as any building that it could have designed, with an unexcelled location. It is a four-story, concrete, and absolutely fireproof structure, flooded with light, and furnishing 32,000 feet of floor-space, enough to give each of 150 physicians a large office (12x14 feet in size) with an ample vestibule.

This large building is now crowded with medical merchandise and appliances.

The fourth floor is occupied by the pharmaceutical department, in which will be found an extensive line of the standard pharmaceuticals bearing the company's name as a guarantee of their purity, general excellence, and standardization. In addition to these there will be found all the standard preparations, but there will be found in the department no patent medicine. This department is under the management of Mr. I. C. Bryant, with an established reputation for the successful management of this line of work.

The third floor is given entirely to hospital supplies of every name and nature, many things in it being of the Company's own manufacture.

The second floor is devoted exclusively to the manufacture of electrical sterilizers, dental wall-plates, and

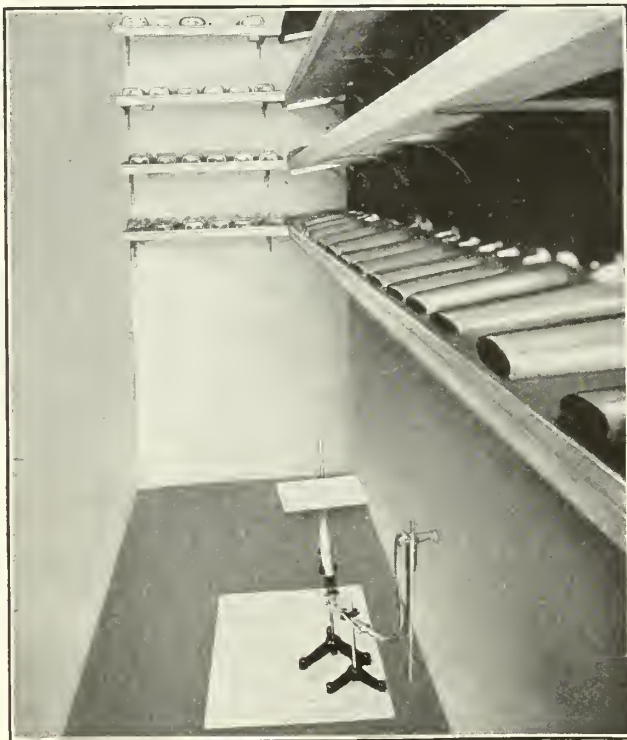
white-enamel furniture. This very important work is under the supervision of Mr. W. G. Holmes, who has attained a high reputation as a designer and builder of sterilizers and other hospital equipment, in which work he has been engaged for many years, and he has given the profession many of its best hospital appliances.

The first floor is occupied by the offices, medical books, dental supplies, surgical instruments, hospital supplies, X-ray apparatus, and as a general show-room. The X-ray department is especially well supplied with this line of apparatus and its accessories. The arrangement of this floor and its exhibits have attracted wide attention from visiting physicians and the representatives of eastern houses, and all say it is unexcelled.

The commodious basement furnishes ample space for receiving and shipping rooms and the electrical and heating plant of the building.

All the office and traveling men of the Company have had years of experience in their respective lines, and understand the requirements of the medical profession; and it is their duty and their pleasure, not only to satisfy every customer, but to be of special aid to him either when he is in need of expert service or places an order, small or large, demanding particular and prompt attention.

The sales of this Company in practically only nine months of business have been three times the sales hoped for during its first year, and this fact tells its own story.



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THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, MARCH 1, 1917

No. 5

SOME CONSIDERATIONS ON THE SUBJECT OF URETERAL STONE*

By OSCAR OWRE, M. D., F. A. C. S.
MINNEAPOLIS

Before the advent of the Röntgen ray the majority of stones found in the upper urinary tract were in the kidney. Now over half of the stones discovered by the radiograph are located somewhere in the ureter.

It is a deplorable fact that the x-ray plates are often made to include only that part or side of the genito-urinary tract in which the pain is located when they should include both kidneys, both ureters, and the bladder.

It is of interest to note that, in 56 cases of ureter stone examined and radiographed by Israel, he found 9, or 16 per cent, had stones in both ureters. This percentage might have been higher if twenty additional cases had been radiographed. In one patient (M. G.) examined by me, a stone was removed from the right ureter by means of the ureteral catheter and the injection of warm glycerine; and on subsequent radiographic examination I found a large stone in the right kidney and one double its size in the left.

In January, 1915, Mr. S. consulted me because of pain in the left kidney with the history of renal colic and the passage of a small stone. The complete radiogram showed nothing on the painful side, but on the right it showed a large kidney filled with a calculous mass (See Plate I). The left kidney was found to be tender on palpation, there was a great deal of pus in the catheterized specimen. Complete radiograms will unquestionably guide us in surgical interference and reduce the mortality rate.

Many detailed reviews of series of cases have been reported with the purpose of establishing figures to show how often a stone is lodged at



Plate I.—Patient, who had pain in the left kidney with attacks of renal colic, passed a ureteral stone. Upon subsequent radiographic examination the opposite kidney is shown to contain a large dendritic stone mass; this fact shows the importance of a complete examination of the entire genito-urinary tract.

the points of constriction in the ureter. While these may be of interest, yet, from a practical standpoint, I think we are safe in saying that a

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

stone in its descent from the kidney is most likely to become caught at one of three points of constriction, namely, at the outlet of the kidney pelvis, at the brim of the bony pelvis, or at the entrance of the ureter through the bladder.

Over one-half are found to be arrested in the pelvic portion, next in frequency in the lumbar, iliac crossing, and interstitial portion of the bladder, and a very few at the meatus.



Plate II (A).—Stone in right kidney and an elongated shadow in pelvis.

Pain caused by the descent of the stone is usually the first indication of calculus in the ureter. That a stone may exist in the kidney without causing pain is unquestionably true; and that a small smooth one may pass from the tract into the bladder without discomfort is also possible. Pain is due to two processes: first, the increased pressure within the kidney from the blocking off of the ureter; and, second, localized infectious processes either in the kidney itself or at some point in the ureter.

When the pain is in the upper quadrant and on the right side it is easily confused with gall-

bladder trouble; especially is this the case when the urine is negative. When in the lower quadrant it is frequently confused with appendicitis, more often so when no blood, epithelia, leuco-



Plate II (B).—The same as Plate II (A), with radiographic catheter in the kidney. The pelvic shadow is not in contact with the catheter.

cytes, or oxalates are found in the urine. On the other hand, at this point should be mentioned the frequent occurrence of blood in the urine during an attack of appendicitis. On three occasions I have been called to catheterize the ureters



Plate III.—Case referred to in the text when five stones were removed through an external ureterolithotomy. The round smooth bodies, from location and shape, could be said to be phleboliths. The two lower shadows are more irregular; the lowest one elongated, conforming to the usual contour of a ureteral stone. The lower stone was so tightly impacted in the ureter that a radiographic catheter could not be passed. The ureter above the large stone was dilated, and contained the other four stones.

in cases of correctly diagnosed appendicitis, but in which marked quantities of blood were found in the urine shortly after the arrival of the patient at the hospital.

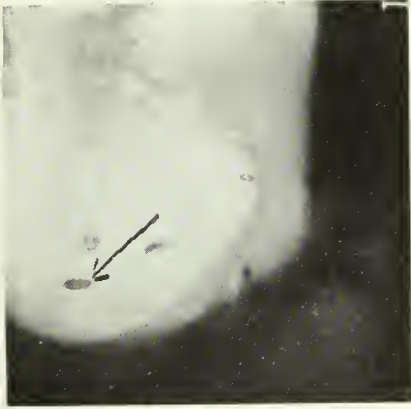


Plate IV.—Case of a young woman seen in consultation with Dr. H. B. Sweetser. The stone was seen with the observation cystoscope projecting partly into the bladder, and it could be easily palpated through the vagina. She passed the stone shortly after the examination. There was a surgical kidney with multiple abscesses on the same side.

Particularly perplexing are those cases with attacks of appendicitis which are not outspoken in character and are accompanied by dysuria, frequent urination, and blood-cells, casts, and albumin. Cases have been reported by several writ-

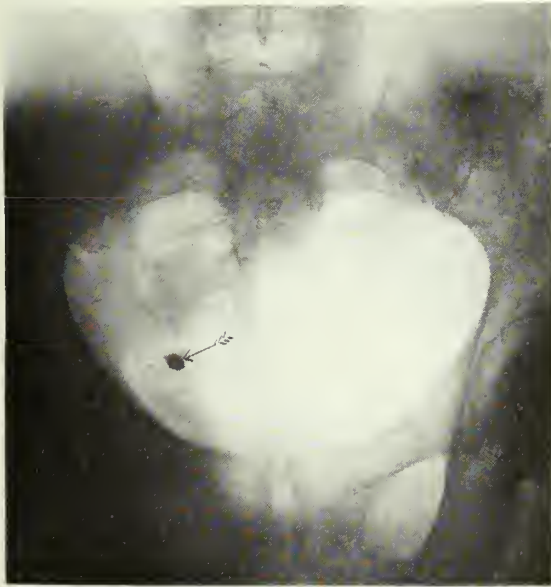


Plate V (A).—Case of Mr. H. This stone, at operation, was tightly impacted in the bladder portion of the ureter. An extraperitoneal incision was made, but the stone could not be palpated. The cystoscope was introduced into the bladder. A large catheter was pressed into the meatus, and the stone was pushed up the ureter between the operator's fingers.

ers,—Hunner, Seelig, Erdmann, and others,—where adhesions to the ureter with septic nephritis and also perinephritic abscess were found resulting from appendicitis, all giving rise to pain closely resembling kidney and ureteral stone.

In the majority of cases, no matter where the stone is lodged, one or several of the following painful areas are present: penile, testicular, inner surface of the thigh, the labia, and the costo-

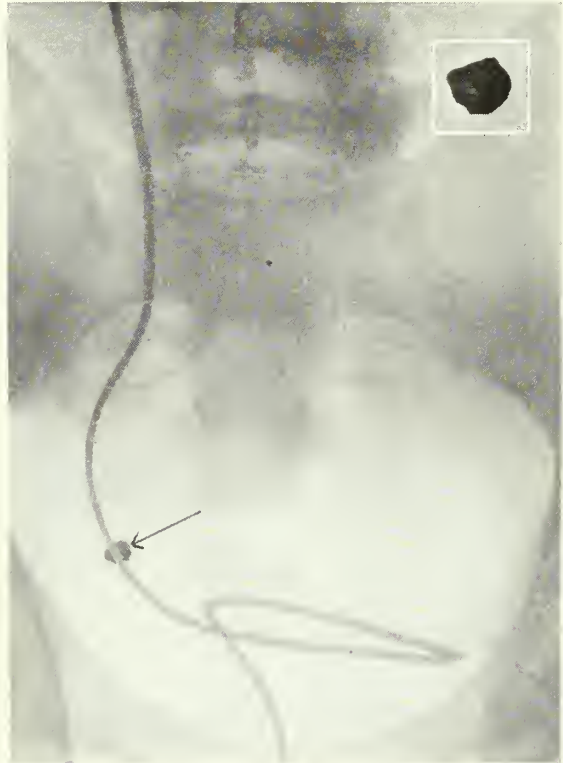


Plate V (B).—Case of Mr. H. Shadowgraph catheter in contact with stone. Above and to the right shows stone removed by extraperitoneal route together with intravesical manipulation, as stated.

vertebral angle. Tenderness only on deep percussion is found in the costovertebral angle. Pain is often found directly over McBurney's point, due to a stone in the hilum or pelvic portion near the spine of the ischium. This pain can be differentiated from that due to appendicitis by the fact that in the former there is seldom rigidity of the abdominal muscles, and, when suddenly removing the hand deeply pressed over McBurney's point, it is not followed by pain as in appendicitis. Inspection of the ureteral meatus and the radiographic catheter usually assist us in reaching a correct diagnosis.

The writer has found stone in the kidney and

in the ureter in ten such cases which had been subjected to gall-bladder incision and appendectomy without relief. A most interesting case is the following:

Miss E. S., November, 1914, aged 42, gives a history of having had attacks of pain in the upper right abdomen for several years, accompanied by dyspepsia and occasional vomiting. There were no urinary symptoms at any time. In March, 1911, the gall-bladder was



Plate VI (A).—Phlebolith. Patient had history of pain with colic. Plate was made of kidney and pelvis on both sides. In spite of its shape, this was thought to be a stone.

opened; after leaving the hospital the pain recurred at intervals as before. One year later the appendix was removed. She was well for eight weeks, when the same pain in the upper abdomen recurred. The urine examined at the time of consultation showed a trace of albumin; acid reaction; sp. gr., 1018; and some leucocytes and red cells. An x-ray of both kidneys showed a stone in the right with an elongated shadow in the lower pelvis, thought to be a ureteral stone, but it did not lie in contact with the radiographic catheter. The kidney stone was removed, and the

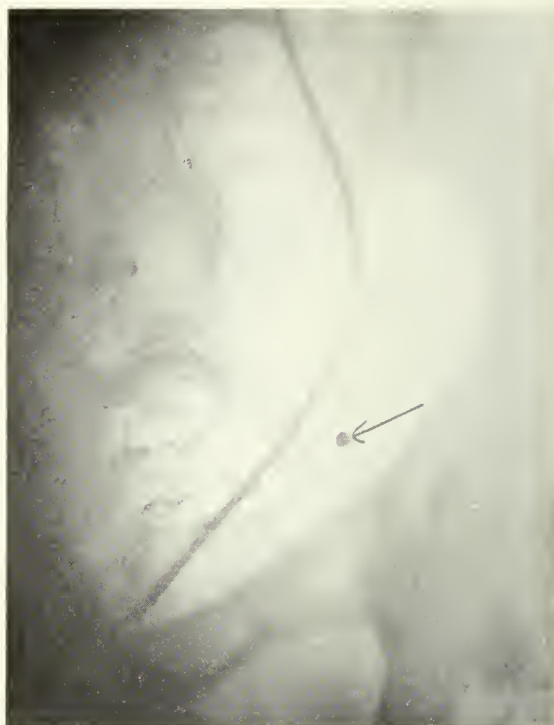


Plate VI (B).—Phlebolith. Radiographic catheter is seen to be at least 1 cm. from the round phlebolith shadow.



Plate VII (A).—Case of Mrs. H. H. Shadow in pelvis on right side. This node could be palpated in the vagina at the juxtaposition of the former and the cervix of the uterus. A small, hard gland was found at the exact position of the shadow.

patient made a complete recovery. She had been radiographed at other clinics. (See Plate II, A and B.)

It is well-nigh impossible to differentiate kidney from ureteral stone from the clinical symptoms alone. If the stone occupies a position in the interstitial portion or the so-called juxta-vesical position and becomes fixed, it can sometimes be palpated through the vagina or rectum, and, if of large size, through the abdomen. The pain becomes localized, and is increased by pressure. Stones in this position also cause radiating pains in the testicle, over the pubes, inner side of

sometimes obscure a small stone, which difficulty may be overcome by changing the position of the tube so as to take the pelvis at a different angle. Shadows in the pelvic bones, nodes in the liga-



Plate VII (B).—Case of Mrs. H. H. Radiographic catheter appears to be directly over and in contact with the round shadow in the pelvis. Had we changed the position of the tube or made stereoröntgenograms we might have been able to reach a more definite diagnosis as to the distance of the shadow from the ureter. The injection of thorium solution might have been of value.

labia and bladder. If close to the bladder or projecting into it the symptoms are nearly those of calculus in the bladder.

The x-ray, together with the radiographic and wax-tipped catheter, is the most reliable agent necessary for an accurate diagnosis as to the position of the stone. The x-ray fails in a small percentage of cases, variously estimated from 5 to 11.7 per cent. Stone shadows are frequently missed in extremely lean and old people, also in very fat persons. A stone not containing any calcium would be missed. The pelvic bones will



Plate VIII (A).—Phlebolith or gland.

ments, phleboliths, enteroliths, atheromatous plates in the external iliac artery, and calcareous glands in the pelvic region, offer a most perplexing condition for the differential diagnosis of ureteral stones.

Kelly states that numerous phleboliths are



Plate VIII (B).—Same phlebolith as above, which is rather close to, but not in contact with or covered by, the catheter.

grouped within two to two and one-half centimeters of the tip of the ischial spine, and here occupy a position identical with many ureteral calculi. Perfectly round shadows are usually phleboliths; ureter stones are elongated, and

often show irregularities. "A little further back in the true pelvis, taking in the inner crescentic curve of the ilium, is the location where the calcified glands are most often found." (See Plates V to XIX.)

Shadows along the spinal column or at the brim of the true pelvis are usually glands, yet in these situations, ureteral stones may be overlooked unless a radiographic catheter is used to show whether or not they are in the ureter. Time and again plates are presented to us in which doubt exists when the stone is low down in the

methods of Harris and Hinman. Kelly's method in the female is very accurate and of value. Here again the stone may be in such a position that the



Plate IX (A).—Oval calculus in the pelvic segment of the ureter.

pelvis. One year ago in Dr. Dunsmoor's clinic a plate was shown with five nearly round shadows low down, usually where phleboliths and glands are diagnosed. The ureter was completely obstructed, and in this case no radiographic catheter could be passed. At operation five small stones were found just above the interstitial portion of the ureter. (See Plate III.)

The passing of an elastic catheter has very little diagnostic value, for it often passes freely by the stone or pushes it up ahead into the kidney. It may also pass a stone lodged in a pocket. If arrested it may be caught in a fold or stricture. When beaded with wax it is sometimes of value if found to be scratched. In the male the greatest care is necessary to avoid scratches before its introduction, even when employing the



Plate IX (B).—Oval calculus in the pelvic segment of the ureter. Radiographic catheter lies alongside the stone.

wax will not touch it, and, further, the stone may be covered with mucus and pus and the wax bead pass by without a scratch.



Plate X.—Ureteral stone at the spine of the ischium, impacted; a catheter could not be passed. The stone was removed by the extraperitoneal route. This stone is elongated and irregular in outline.

Pilcher states, "If a stiletted catheter be used and an x-ray picture be taken, the shadow of the stone in the ureter and that of the wire stilet will coincide. It is not necessary to dwell upon this

phase of the subject longer than to say that, unless the shadow which is seen upon the photographic plate coincides with a stiletted catheter in the ureter, a positive diagnosis should be questioned." This is only partly true, and is often incorrect.

In the plate herewith marked Mrs. H. H. (Plate VII), is shown the shadow of a nearly round body in the pelvis. It is in line with the ureter. It lies close to and is covered by the radiographic catheter. She is 38 years old, and has three children. Examination of the abdo-

in doubtful cases stereoröntgenograms should be made, and plates taken at different angles, to ascertain the distance of the shadow from the radiographic catheter. Further, the latter is not positive proof that the stone lies in relation to it unless corroborated by other data. It is a question whether thorium solution would have thrown more light in making a diagnosis. The wax tip showed no scratch marks, and the catheter passed easily to the kidney.

Stones when low down in the pelvis can often



Plate XI (A).—Case of Mrs. G. D., aged 24, seen in consultation with Dr. Gunderson on October 4, 1916. There was a history of intermittent attacks of renal colic, with radiating pains in the lower pelvis to the labia and leg, over a period of five years. Large stone in ureter near the ischial spine.

men reveals a general visceroptosis. There was sudden severe pain over the right kidney, extending down to the pelvis on the right side. There was frequent and painful urination; temperature, 103° to 104° . The kidney was large, and painful on palpation, and the urine contained blood and pus. A node could be felt in the vagina at the juxtaposition of the former and the cervix of the uterus. Incision over the ureter and palpation of the latter revealed a large ureter, but no stone. A small hard gland was found in the exact location of the shadow. There was a kink in the ureter; and a large surgical kidney with multiple abscesses was removed, together with the ureter. This emphasizes the fact that



Plate XI (B).—Case of Mrs. G. D. The same picture as the above with a shadowgraph catheter in the kidney. The catheter lies in contact with and just over the stone. Some pus and blood was found in the urine. The ureteral mouth was edematous, and the lips somewhat everted. The patient was operated on on January 6, 1917, by extraperitoneal ureterolithotomy. She fully recovered in two weeks, and there was no leakage of urine.

be palpated through the vagina. Plate IV shows a stone larger than a bean, which was partly protruding into the bladder and was seen with the observation scope. It was easily palpated through the vagina, and was passed on the evening of the examination. In the male they can be felt through the rectum, but may easily be confused with nodes in the prostate or tuberculosis of the prostate and vesicles. A spasm of the ureter may lead to confusion, but, by waiting, this subsides and the stone is felt.

Two years ago I was consulted by a patient



Plate XII (A).—Case of Miss A. H., aged 30, who was seen in consultation with Dr. Sweetser. First attack of renal colic in left kidney April, 1916. Pains radiated toward bladder and became localized in pelvis. Above plate taken August 1, 1916.

who had a ureter stone in the intramural portion of the ureter. He had his Röntgen plates which showed the stone, and he wanted to know if it was safe for him to travel to Baltimore for its removal. On cystoscopy a dark spot could be



Plate XII (B).—Case of Miss A. H. Picture taken October 7, 1916. The stone is now in the vesical portion of the ureter. Cystoscopy shows a bulging over the ureter, and the lips are swollen. The stone has made distinct progress, and can probably be delivered by cystoscopic methods.

seen in the middle of a puffy edematous ureter. The stone could be felt through the rectum. I asked if I might gently massage the same, which I did. That same night I received a message that he had passed the stone. He had had localized pain in this left side for six weeks, and many attacks of colic for nine months.



Plate XII (C).—Case of Miss A. H. The stone passed sixty hours after dilating the ureteral meatus with successive sizes of elastic ureteral catheters.

Massage or manipulation of the ureter for the removal of stones low down in the pelvis, is a method which does not seem to have attracted general attention. I believe the position of the stone can be changed in this way as well as by the intravesical method, and manipulation will, in many cases, expel it into the bladder. Dr. Ayers, in a discussion in April, 1912, said, "All you need to do in a large number of cases is to change the position of the stone to have it pass,



Plate XIII (A).—Case of Mr. O. L., aged 29, October 30, 1916. The arrow points to a large ureter stone. The history was of pain in the left kidney radiating to the loin and testicle, with twelve attacks in the last year.



Plate XIII (B).—Case of Mr. O. L. The radiographic catheter points to a stone. The catheter could not be passed beyond, and the obstruction is exactly 13 cm. from the ureteral meatus.

and in almost all men you can reach the lower portion of the ureter, and, by a little manipulation, can usually change the position of that stone so that in a few hours out will come the stone. I have removed sixteen stones from the lower ureter, and only three times have I had to use a forceps."

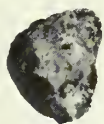


Plate XIII (C).—Case of Mr. O. L. Actual size of the stone removed by an extraperitoneal incision. Two stitches were taken in the ureteral incision, and there was no leakage of urine following the operation.

The urine may be negative in some cases where there is complete impaction. Red and pus cells are present in most cases, yet pus cells are so often present, resulting from previous inflammations of the posterior urethra and from cystitis in women, that too much significance cannot be placed upon their presence.



Plate XIV (A).—Case of Miss B. P., November 26, 1916. The stone is low down in ureter. Cystoscopic examination made on November 28, showed the stone to be in the intramural portion of the ureter. There was a distinct bulging of the bladder wall over the course of the ureter just above the ureteral meatus. The ureteral mouth was edematous, and the lips greatly swollen. It was dilated, and the stone could be seen in the middle of the thickened lips. December 2, second cystoscopy. After dilating the ureteral meatus the concavity of the cystoscope was placed back of and close to the bulging in the bladder; the index finger of the right hand was placed in the rectum, and the stone could be palpated and the beak of the cystoscope in the bladder could be easily felt. By pressing the cystoscope in the bladder and the finger in the rectum together, and keeping them closely back of the stone and drawing them both toward the ureteral meatus, I was successful in delivering the stone into the bladder.



Plate XIV (B).—Case of Miss B. P. Actual size of stone removed by technic as described above.

The ureteral catheter may tell us if the pus comes from the kidney, but it is of no value in considering red cells, as there are nearly always some erythrocytes in the catheterized specimen. Crystals of oxalates and urates in excess indicate stone.

The cystoscope shows a definite and diagnostic change in the mouth of the ureter upon the af-

affected side, characterized by redness, swelling and eversion. If the stone is in the ureteral orifice it may be seen as a dark or white spot in the center of the thickened lips, or protruding into the bladder.

In considering the treatment of ureteral stone it should be remembered that fully half or more pass into the bladder. If the condition of both kidneys be good, and after forty-eight hours it can be ascertained that the kidney is not completely blocked off and the stone is making progress, determined by the *x*-ray, one is justified in waiting, giving plenty of water and sedatives. Should the stone become stationary, and urinary drainage from the affected side be established, attempts should be made to change the position of the stone by palpation through the rectum or vagina or by passing the ureteral catheter. (See Plates IV and XII, A, B, C.) Of course, such methods are not attempted if the stone is larger than one centimeter or is high up or in the kidney pelvis.

The functional tests, especially the indigocarmine, are of great value in estimating the capacity of the kidney. The carmine test, in conjunction with the irrigating observation cystoscope, is valuable in determining how much work the affected kidney is doing, especially when it is impossible to insert the catheter. If a catheter can be passed to or beyond a stone the injection of olive oil or, preferably, warm glycerine will often bring about its expulsion.

When low down in the intramural portion dilation of the meatus by the insertion of successive sizes of catheters is just as efficient as the use of complicated ureteral dilators. When the stone is large and more dilation is necessary, the mucosa can be slit with a knife. Drs. Braasch and Draper have shown that there is no danger from slitting this valve. Further, the stone can be grasped with forceps, and delivered into the bladder. Owing to the high mortality of operation by section, ranging from 6 up to 17 and 52 per cent where complications existed, the cystoscopic methods should be employed in every case. No damage can be done, and, if unsuccessful, the operative method can be used as the very last resort.

When resorting to the cutting operation, especially if some time has elapsed since the examination, one must always re-examine the patient with the *x*-ray and cystoscope, for during the interval it often happens that the stone has changed its position or that it has been passed into the bladder. In cases requiring ureterotomy

the extraperitoneal route has been successful in every case seen by me.

In cases where the stone is greatly impacted in the bladder portion of the ureter, and other measures, such as outlined above, have failed, we have attempted to remove the stone through a low muscle-splitting extraperitoneal incision. The difficulties encountered in this situation at times were such that suprapubic cystostomy seemed almost imperative. On two occasions the following technic succeeded:

During the operation it was thought that the stone must have slipped into the bladder, and the observation cystoscope was inserted. Failing to see the stone, the beak of the instrument was pressed firmly against the ureteral meatus. The stone was dislodged, and passed up the ureter between the operator's fingers. On another occasion a direct cystoscope with an extra large single catheter channel was used. The heel of the scope was held close to the meatus, and the catheter was pressed into the ureteral mouth. The stone was likewise moved up the ureter, and was removed through a longitudinal incision. (See Plate 5, Mr. H., A. and B.)

Owing to the great advance made in intravesical methods of technic it would seem that the transvesical method is now rarely necessary for the removal of stones in the intramural part of the ureter. (See Plate XIV.)

Unless the incision in the ureter is long it is not necessary to stitch it; when the incision is in the lower end of the ureter, stitching may be omitted. In some cases there is no leakage of urine; in others it drains from one day up to four or five. In one instance, the drainage continued for two weeks, but ultimately with complete healing. A folded strip of rubber tissue should always be led down to the incision in the ureter.

I am greatly indebted to the surgeons and the röntgenologists, respectively, of the Swedish, St. Barnabas, and Norwegian Hospitals for valuable data in the preparation of this paper.

DISCUSSION

DR. C. P. NELSON (Minneapolis): I have seldom seen a more appreciative patient than the young man with the ureteral stone, which Dr. Owre located with the *x*-ray and ureteral catheter. It was a small irregular stone. I removed it by the extraperitoneal route, and inserted two small catgut stitches in the ureter. It healed up promptly in a perfectly clean way.

DR. A. C. STRACHAUER (Minneapolis): Dr. Owre has given us an important message. Unfortunately, the majority of general practitioners seem to consider such an essay to be written primarily for urologists,

and to be of only passing interest to themselves. The opposite is true. The men interested in urologic surgery appreciate and know its truth, while a host of general practitioners performing surgery blunder along, taking out appendices for stones in the ureter. The appendix has been more imposed upon than any other organ in the anatomy, unless it be perhaps the tonsil. I have personally operated upon nine patients in whom the appendix had previously been removed. Two of them had had secondary operations upon the gall-bladder, and in each of the nine there was a stone in the kidney or ureter. One had bilateral nephrolithiasis.

Every man who opens the abdominal cavity should consider the frequency, particularly in his right-sided chronic cases, of urologic stones. It is to be remembered, as Dr. Owre has pointed out, that an x-ray picture of one side is insufficient. I have had the experience of right-sided symptoms from a left renal stone. In addition, nephrolithiasis is not infrequently bilateral. More thorough study, repeated urinalysis, careful Röntgen examination of both kidneys and ureters *after proper preparation* of the patient, and more frequent recourse to cystoscopic study will result in more correct diagnoses.

DR. O. A. OLSON (Minneapolis): The only symptom was that of hemorrhage. I think one point in the diagnosis detailed by Dr. Owre is of importance, and that is bulging of the ureter on the affected side. I have seen that in several instances, and it is pretty generally present.

DR. ARTHUR T. MANN (Minneapolis): I think this has been an exceedingly interesting paper. It has been carefully prepared, and has done a great deal of good. I feel that as surgeons we must realize, as we have in the last few years, that these cases must be carefully studied before the suggestion of surgical interference is made. They should be carefully studied from the standpoint of history and from the viewpoint of the x-ray and the use of all the appliances which go with it, the leaden catheter, the injection of the ureters, and the stone absolutely located before one goes in for it.

The operation for stone in the ureter is sometimes one of the most difficult we have to contend with. I think I would just about as soon do a Gasserian-ganglion operation as far as the difficulty of it goes as to do a difficult operation for stone in the ureter. There are some differences, however, according to the place in which the stone is found. When the stone lodges at a point about two inches below the kidney a lumbar incision leads into a deep hole, and in a person who is fleshy, who has a great deal of fat, it is sometimes almost impossible to see the ureter. One device which I have used with a great deal of success is to put the finger up against the kidney and push it upwards, and the ureter will come out like a clothesline. That is a thing of very great value. When the stone is in the pelvis and at a point just above the bladder, the hole is deeper and the space is smaller. Here one has to loosen the peritoneum down to the rectum, and when one gets below the pelvic brim his space is limited and difficult to work in. It is largely finger-work and very little vision to help one, but there is less fat there. The ureter always goes with the peritoneum, as you know, but it is much easier, if one knows this anatomical relation of the ureter, to find it in most cases.

Sometimes it is exceedingly difficult. One of the doctors who has done a great deal of work in this line told me of one man in the East whom I know personally, and who is one of the best urologists and genito-urinary surgeons in the country, who was after one of these low stones. In endeavoring to find it he decided finally to open the tube, which he thought was the ureter, and made a hole in it, and put a probe both ways to feel the stone. He did not feel any stone, and when he took the clamps off, blood gushed out, and he had catheterized a vein. So there are some difficulties connected with the operation. I did one such operation yesterday morning, and the stone came out nicely, much to my pleasure.

By the way, pushing the kidney up to bring out the line of ureter above, applies to the ureter below. You can push the bladder down and the ureter will come out into the line of vision.

Just a word or two in regard to the trouble we have sometimes in deciding that we have an appendicitis and not a stone in the ureter, or that we have a stone in the ureter and not an appendicitis. About two years ago I was called into the country to see a man in whose case a diagnosis of stone in the ureter of the left side was made, on the opposite side from the appendix. He had terrific pain, which ceased between times. The doctor had given him so much morphia without controlling pain that finally he gave him half a grain the first time, to be followed every half an hour with a quarter of a grain, so that he had three-quarters of a grain the next day the first hour and fifteen minutes continuously to relieve pain. After a while the pain would disappear. The doctor told me the patient had pain on the left side radiating down toward the groin. That seemed pretty clear, if the story was right, of stone in the left ureter. However, he was tender at McBurney's point. On rectal examination I was able to reach a point on the right side where tenderness something like the pain he had had could be found. It was on the right and not on the left side. We had had no opportunities for x-ray or anything of that sort. If it was an appendicitis it was not right to relieve him until a complete examination could be made. With the evidence I had I decided that he had appendicitis, and I removed his appendix. His appendix was moderately diseased, but apparently not sufficiently to account for the pain which he had had. The pain stopped at once, however, and I followed that man for over a year, and he never had another pain, so I am convinced it was a case of appendicitis and not one of stone in the ureter.

DR. R. E. FARR (Minneapolis): I want to add a word regarding a method of locating the ureter. Major Seelig has called attention to this point. By watching for the peristalsis of the ureter its position may be located. By delaying an operation a few seconds one may observe the peristaltic waves of the ureter very distinctly; and oftentimes this is a decided aid in ascertaining its location.

DR. F. A. DUNSMOOR (Minneapolis): Dr. Owre referred to two cases in which I was fortunate to secure his services in making a diagnosis. In one group (Group 5) the stones were very small; but they occupied the space as one and, had it not been for an examination, would have been overlooked. When they separated they came down to the size of a wheat grain.

From the remarks made by Dr. Owre and others in the discussion, it appears that the question of determining accurately that stones are present, instead of several other complications or affections, is not an easy one in all cases, and it is well to have an expert to help us out. I have been very glad to have a man in town like Dr. Owre who is able to clear up a diagnosis for me, particularly with reference to the location of the stone or stones.

If you do not want to go over the entire tract of the ureter, if you can fasten the point in your mind as to the anatomy and the place you are to operate on, much can be done, and the doctor has pointed out where the places probably are, but where the actual places are in each instance must be made certain before operating.

As regards the methods of operation: it is up to every surgeon to go through his own technic, but I believe what concerns all of us is, not to be sure that pain along the ureter means stone, because the question of referred pain has shown that the pathologic condition may be elsewhere. Many of us have had the catheter slip around a stone or stones, and even in the hands of the expert the instrument occasionally slides over a stone. The expert who is so familiar with the procedure of locating ureteral calculi is a very handy man to have around a hospital.

DR. G. J. THOMAS (Minneapolis): Dr. Owre is to be congratulated on the excellence of his paper on stone in the ureter. In my experience ureteral stone is the most difficult condition in the urologic field to diagnose correctly.

There are a few points that I want to emphasize, one of which is the coincidence of stone in the ureter and kidney, which is seen in about 6 per cent of our cases. Because of this coincidence a radiogram of both kidneys and ureters is always necessary if a complete diagnosis is to be made. Bilateral urinary stones are observed in about 9 per cent of all cases. The location may be in one kidney and the ureter of the opposite side, or vice versa; or, more frequently, in both kidneys. The diagnosis of ureteral stones cannot be made by the x-ray alone. It is necessary to have the co-operation of an urologist who is accustomed to exploring the ureter with the ureteral catheter. My experience at the Mayo Clinic has taught me that it is best to make a pyelo-ureterogram in all doubtful cases of stone in the ureter. In experienced hands this method of diagnosis does not produce more trouble than the introduction of the shadow-catheter. The negative findings with the shadow-catheter are of value, but the positive findings may be misleading. Frequently the shadows of a suspected stone and the shadow-catheter may lie one upon the other or close enough so that the shadow in question is thought to be a stone when at operation a phlebolith or fecolith is found. The stereoscope has helped to differentiate these shadows, but it is not satisfactory and will not give the information to be found in the ureterogram.

In my experience the next most important aid in the diagnosis of ureteral stone is the waxed catheter. One has to be careful not to obtain a false scratch on the wax because it is very difficult to withdraw the catheterizing shaft of some instruments without the wax rubbing.

At operation it is necessary to be careful about drainage. Gauze drains should not be used because they predispose to the formation of a fistula. Operation through the cystoscope will remove many small stones which are located in the lower end of the ureter. If, after two or three attempts to dislodge a stone by the use of dilating catheters and by the introduction of sterile oil, etc., the stone will not pass, then the case should be treated surgically. I think a large per cent of small stones will pass without any more manipulation than the passage of a catheter for diagnosis.

DR. OWRE (closing): I very much appreciate this generous discussion of my paper.

The stone of which Dr. Nelson spoke, was a very small one. Some of the small stones cause as much trouble as the large ones. Here is a stone (exhibiting) which was passed Sunday. It was very small. It passed through the ureter by giving the patient one-quarter of a grain of morphin and a couple of quarts of water. In Dr. Nelson's case the stone was as small as that, and we had to remove it through an extraperitoneal incision.

I thoroughly agree with what Dr. Strachauer and Dr. Mann say. As to the difficulty of finding the ureter at times, in using the extraperitoneal technic, I should like to ask Dr. Mann if he pushes the pelvis of the kidney upward through the wound or externally during the operation.

DR. MANN: Through the wound.

DR. OWRE: That is a good suggestion. If you can insert a catheter into the ureter before operation, you can palpate the ureter nicely.

Dr. Farr's suggestion of peristalsis is one that did not occur to me, but, undoubtedly, it is valuable. You mean through the extraperitoneal route?

DR. FARR: Yes.

DR. OWRE: The injection of a shadow-casting fluid is all right under certain conditions, but I do not believe it is a good thing to inject any kind of silver salt into a kidney above what might be an impacted stone. You certainly would do damage with collargol. Should the ureter become blocked and the shadow-casting fluid be above it, you have got something you should not have.

As to the insertion of a drain: I did not use gauze. I put gauze inside of thick rubber tissue, not on the incision, but a little above the incision in the ureter. It is withdrawn after the first twenty-four hours.

INTRACANALICULAR PAPILLOMA OF THE BREAST*

BY EDWARD STARR JUDD, M. D.

ROCHESTER, MINNESOTA

The characteristic feature of intracanalicular papilloma of the breast is a bloody discharge from the nipple. Often this is the only symptom; the tumor cannot be palpated, and may even be difficult to locate when the breast is sectioned. Greenough and Simmons¹ state that papillary cystadenoma, villous papilloma, or duct cancer in which gross intracystic papillary growths occur, accompanied often by a bloody discharge from the nipple, should be considered as true local tumor-formations, which have a very high predisposition to carcinoma. Lewis² states that the pathologic processes associated with the discharge of hemorrhagic or sero-hemorrhagic material from the nipple, should be classified in two groups: Group I, abnormal involution associated with serohemorrhagic discharge; and Group II, small papillomas within the milk duct deep within the breast tissue, no tumor being palpable.

Intracanalicular papilloma may be located at any point in the milk ducts. In one of our cases, a tumor with a long pedicle had prolapsed from the nipple and gave the impression of a papilloma, although careful examination showed that it was not attached to the nipple. Such tumors are usually painless, and have no skin attachment. They have been reported as occurring between the ages of 19 and 81, although I think they are more common past middle life. Trauma and child-bearing are not factors in producing them. In very few of our cases of true intracanalicular papilloma have we been able to distinguish a tumor or palpable thickness in the breast. However, Erdmann³ states that at times the condition is so well marked as to be readily recognized as a tumor, and for this reason an erroneous diagnosis of simple cystadenoma may be easily made.

The discharge varies in amount, and may be intermittent. Usually, it is slight and comes in drops, although a considerable quantity can frequently be forced out by pressure on the breast. The fluid is odorless, sticky, and stains the dressing a pale-yellow. A discharge accompanying a carcinomatous condition of the breast is more watery, darker in color, greater in amount, and often has a distinct, rather foul odor. The discharge due to papilloma often contains epithe-

lial cells from the milk ducts. Erdmann mentioned one case in which many streptococci were found in the fluid. The thick, colorless discharge associated with chronic mastitis often contains degenerated cells.

The papillary outgrowths arise from the wall of the milk duct. They have a branching, vascular connective-tissue stalk supporting a large growth of epithelium in the form of villous projections and gland-like interlacing tubules. The epithelium does not infiltrate the surrounding tissue. If a tumor is present, it will be found in the central part of the breast, usually just under the nipple. These papillomas may be multiple, and there may be many tumors in the breast. The epithelial layers of the tumor may be composed of a single layer of columnar cells

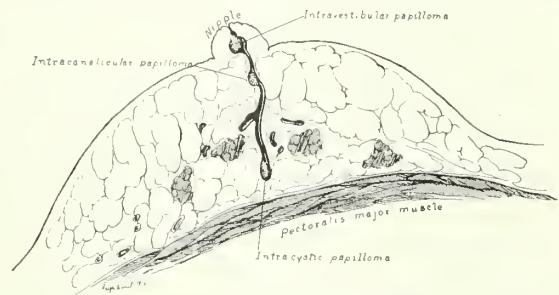


Fig. 1. Diagram of breast, showing different placements of papillomas.

or several layers of cuboidal cells. In papillary cystadenoma we do not know whether the papillary outgrowth is a process secondary to the formation of the cyst. It would seem that intracanalicular papillomas and papillary cystadenomas were separate processes. Certainly, the symptoms from an intracanalicular papilloma may exist for many years, and yet there may be only the single papilloma in the duct and no evidence of cyst formation except perhaps a slight dilatation of the duct. The only difference between intracanalicular papilloma and papillary cystadenoma would seem to be in the place of origin. Intracanalicular papillomas arise from the walls of the milk ducts, while papillary cystadenomas originate in the walls of the acini. Intracanalicular papillomas are more frequently found as single growths on a pedicle, while a cystadenoma is usually composed of a number of interlacing papillomas. Papillary cystadenomas often attain considerable size and

*Presented before the Western Surgical Association, St. Paul, Minn., Dec. 16, 1916.

form a palpable tumor-mass or frequently multiple tumors.

Bleeding from the nipple was at one time considered almost pathognomonic of cancer, and many radical operations have been performed

breast is not an indication for operation. He reports that he has had under observation for some time 12 cases of bleeding nipple which he considers are intracanalicular papillomas because there is no tumor-mass. These patients have had no treatment, and with most of them the discharge ceased at the end of a few years; however, in one case on record, the discharge continued for twelve years. In 1 case reported by Lewis, malignant changes were found in what was primarily an intracanalicular papilloma. This is the only case I have been able to find record of in which these changes have been observed. The patient had a bloody discharge from the nipple for three months. Lewis states that a diagnosis of malignancy could not be made from the nature of the tumor or the character of

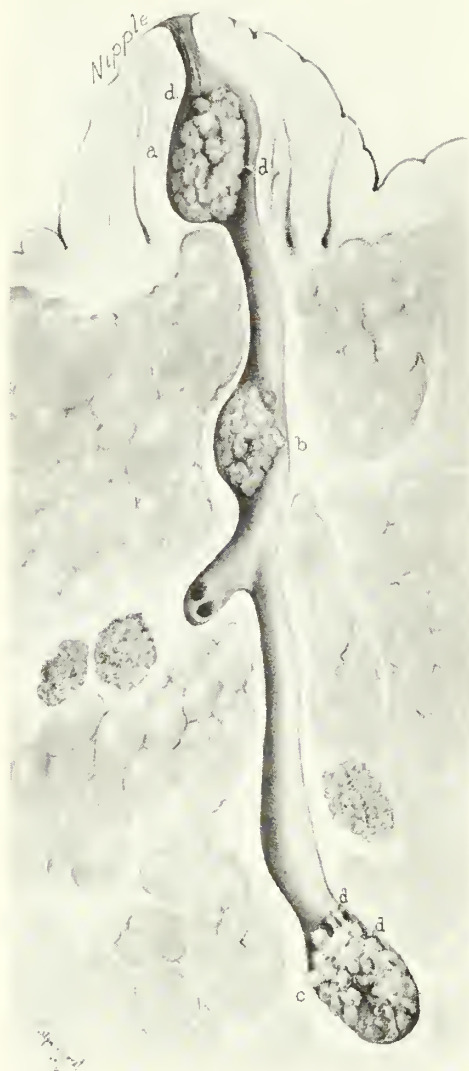


Fig. 2. Breast enlarged four times.
a. Intravestibular papilloma.
b. Intracanalicular papilloma.
c. Intracystic papilloma.
d, d, d. Pedicles.

on that basis alone. The more recent teachings of Bloodgood,⁴ Lewis, and others would seem to show that bleeding is more apt to be a symptom of a benign condition than of malignancy. Bloodgood states that bleeding from the nipple without the presence of a palpable tumor of the

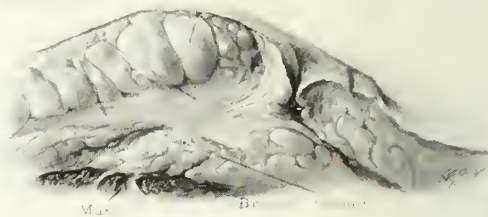


Fig. 3. Carcinoma near the base of the nipple, showing nipple-retraction.

the discharge as the lesion did not differ in these respects from a papillary cystadenoma. The granular wall of the cyst, however, aroused suspicion, and was shown to be malignant. Erdmann reports 2 cases in his series which from gross appearances he thought were malignant, but his pathologist reported that they were benign. The pathologist, however, made a notation that there was an atypical proliferation of the epithelium and that they were suspicious. Greenough and Simmons report 3 malignant cases in a series of 20 cystadenomas.

I have recently reviewed 100 consecutive cases of discharging nipples. I found 50 in which a serohemorrhagic discharge was present, and 50 which had other forms of discharge from the nipple.

In the first group of 50, I found the following pathologic conditions associated with bleeding nipple: 27 patients (54 per cent) had carcinoma of the breast; 12 (24 per cent) had chronic cystic mastitis; 8 (16 per cent) had intracanalicular papilloma. In 3 cases (6 per cent) the early discharge seemed to be a serohemorrhagic

oozing from the nipple, which later proved to be Paget's disease.

In the second group of 50 cases which includes those in which there were various kinds of discharges, exclusive of the hemorrhagic type, I found 30 (60 per cent) to be breast carcinomas; 14 (28 per cent) chronic cystic mastitis; 4 (8 per cent) intracanalicular papillomas; and 2 cases (4 per cent) proved to be simple cysts.



Fig. 4. Extruded papilloma of the nipple.

	50 cases serohe- morrhagic discharge from the nipple		50 cases other forms of discharge from the nipple	
	Cases	Per cent	Cases	Per cent
Carcinoma	27	54	30	60
Chronic cystic mastitis..	12	24	14	28
Intracanalicular papil- loma	8	16	4	8
Paget's disease	3	6	0	0
Simple cyst	0	0	2	4

SYMPTOMATOLOGY

Group I.—Bleeding nipples: A tumor was present in each of the 27 cases of carcinoma. The first symptom in 22 of the 27 was a tumor; in the remaining 5 cases it was a discharge from the nipple. Fourteen of the 27 patients complained of pain in the breast. Twenty-three patients out of the 27 had undergone lactations. The average duration of the discharge was ten months; the average age of the patients was 54 years.

A tumor or palpable thickening in the breast was present in 7 of the 12 cases of chronic cystic mastitis. In 9 of the 12, the first symptom was

discharge; in 3 it was pain; however, only 4 out of the entire 14 patients complained of pain at any time. Eight of the 12 had undergone lactations. The average duration of the discharge was 10 months; the average age of the patients was 50 years.

A palpable tumor was present in 4 of the 8 cases of intracanalicular papilloma. Nipple discharge was ten months; the average age of the cases. Three of these patients had undergone lactation. The average duration of the discharge was about four years; the average age of the patients 47 years.

In the 3 cases of Paget's disease the early symptom of serohemorrhagic oozing from the nipple was later followed by ulceration and crusting.

Group II.—Non-hemorrhagic cases: A tumor was present in 29 of the 30 cases of carcinoma in

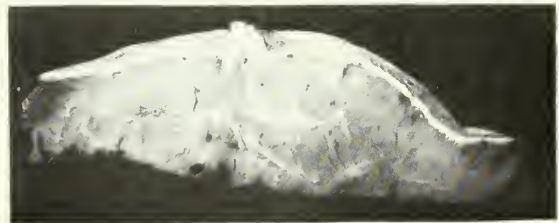


Fig. 5. Cross section of extruded papilloma of the nipple.

this group. In the one instance in which the clinician was unable to palpate a tumor, the carcinomatous growth was small, involved the area directly beneath the nipple, and could easily have been missed. Tumor was the first symptom noted in 23 of the cases; in the remaining 7 it was discharge. Pain was present in 26 out of the 30 cases. The average duration of the discharge was thirteen months; the average age of the patients 50 years.

A tumor was present in 13 of the 14 cases of mastitis. The case in which a tumor was not palpated was that of a woman who four years previously had had a tumor removed from the breast and whose complaint at the time we examined her was pain and an intermittent glairy mucoid discharge. Tumor was the first symptom in 5 cases; discharge in 4; and pain in 5. Ten of the 14 patients complained of pain. Ten patients had undergone lactation. The average duration of the discharge was 18 months; the average age of the patients 46 years.

A tumor was present in 3 of the 4 cases of intracanalicular papilloma. The first symptom in

each of the 4 cases was discharge from the nipple. Pain was present in 1. All of the 4 patients had undergone lactation. The average duration of the discharge was three years; the average age of the patients 52 years. These cases really belong to the hemorrhagic group, as the discharge was variously described as chocolate colored, dirty brown, etc., showing that hemorrhage had taken place in the cysts at some time or other, but had been retained and undergone changes.

A tumor was present in both of the 2 cases of simple cysts. In 1, the first symptom was tumor; in the other, discharge. The discharge was described as milky or yellowish in appearance.

Recently, in reviewing our 32 cases of papillomas of the breast, I found the following pathologic classification: intracystic papillomas, 8; intracystic carcinomatous papillomas, 8; intracanalicular papillomas, 10; carcinomatous intracanalicular papillomas, 3; intra-acinar papilloma, 1; intracanalicular papilloma associated with a carcinoma of the breast, 2. In this series, carcinoma was present in 11; in 3 other cases, the pathologist believed the condition was carcinomatous, but he was unable to make a definite diagnosis.

The characteristic symptom in these 32 cases was bleeding or a serohemorrhagic discharge from the nipple. In a few instances there were palpable tumors, but in all of these the growth was produced by chronic mastitis or by cystadenoma, and in no instance was there a papil-

loma in the duct large enough to be palpated, except in one case, in which it extruded from the nipple.

This review of 100 cases of discharging nipples would seem to confirm former reports on the subject. Carcinoma appears to be the most common lesion producing a discharge from the nipple, but it is almost invariably associated with a tumor in the breast. Tumor is usually present sometime before the discharge begins. In some of our cases of chronic cystic mastitis, the discharge may have been from a duct papilloma, for often these tumors are very small and might easily be overlooked. This series also seems to lend evidence to the contention that a hemorrhagic or serohemorrhagic discharge from the nipple in the absence of a palpable tumor is most often produced by benign intracanalicular papillomas. In view of this fact, treatment should be conservative, especially in young women. In older women, particularly if the condition is associated with chronic cystic mastitis, the best procedure would seem to be the removal of the mammary gland. If there are evidences of malignant change, a radical operation should be done.

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DOSAGE AND THERAPY IN TOOTH EXTRACTION

By FREDERICK B. KREMER, D. D. S.

MINNEAPOLIS

Professor Wm. T. Campbell, of Brooklyn, New York, speaking of the progress in surgery during the year past (*Medical Times*, January, 1917) calls attention to three dominating features, but one of which concerns us in the present discussion. He places first the relation of focal sepsis in the mouth to systemic infection and says:

Numerous papers on this subject have been published by surgeons, internists, and dentists. All recognize the connection between the septic foci in the mouth and such systemic lesion as arthritis, myositis, endocarditis, pneumonia, and even infections of the ovary, parametrium, and uterine wall. Duland, Billings, Rosenow, and C. H. Mayo have written at length on this subject, and the value of the findings marks this

year as a period in which a complete propaganda has been inaugurated concerning dental infections—and the observations would lead us to conclude that the septic foci are found most frequently in the teeth, next in the tonsils, and, lastly, in the sinuses. Many obscure infections will henceforth be traced back to the mouth when careful examination of the mouth, supplemented by a radiograph of the root sockets, becomes the routine practice.

The position which Dr. Campbell takes has been borne out by the experience of many others besides those whom he has named, and a great deal of research work has been done, probably some of the most valuable of which is that of Dr. W. H. H. Logan, of Chicago, on blood-

changes in those carrying teeth showing periapical infections.

A large amount of clinical and research work has been accomplished by Dr. Henry L. Ulrich; and his findings are such as to confirm the opinion of those whose names have been mentioned, as well as that of other workers in this same field.

In studying the literature on this subject I find a very marked unanimity of opinion as to the proper course which should be pursued with reference to infected teeth when they are known to be present and exercising influence upon the general health.

All authorities agree that the extraction of the septic members is indicated if one desires to be certain of his results, but no one, so far as I know, has touched upon the dangers of unwise extractions or upon the therapeutic value of the procedure. It is to these two points that I desire to call attention, believing that a study of this problem will result in greatly increased efficiency in the treatment of infections from mouth foci.

Professor Victor C. Vaughn calls attention to the fact that bacteria and tissue-cells are living proteins, and that the digestive action of one or the other is a proteolytic digestion. The breaking up of the proteins by enzyme action splits the protein molecule in two or more portions, one of which is a poison. This poison is set free, to a greater or less extent; if to the extent that the poisonous portion of the bacterial protein is set free by tissue-cell digestion, the infected person is poisoned. Professor Vaughn's theory of the action of protein poisoning appears to be well supported by clinical experience, for it is not uncommon to find those suffering from focal infection developing exaggerated symptoms following the elimination of foci. Ulrich calls attention to the lighting up of old foci or the creating of new ones by ill-advised surgery when these conditions exist.

Much of our present information is deductive, and is based largely upon the clinical pictures which these cases present before and after treatment. According to Vaughn, when the protein molecule is undergoing digestion by the body-cells a new and powerful specific proteolytic enzyme is produced, which has the power of destroying the kind of bacteria causing infection; also that the power acquired by certain body-cells to produce promptly this proteolytic

enzyme on re-exposure to disease accounts for immunity against subsequent attacks.

The question as to why teeth so readily and frequently become sources of infective processes has been thoroughly discussed by different authorities, and is generally so well understood that, for our present purpose, we may pass the subject by, and inquire somewhat into the *modus operandi* by which they exercise their influence, both by their presence and by their removal.

Experiments conducted to determine the type of organism found in the periapical region, have shown very constantly the presence of streptococci which in this location are a low type of organism and may therefore be carried for a long period of time without apparent influence upon the welfare of the host. This probably is accomplished by the establishment of a tolerance for the protein poison which is being thrown out and which requires in many instances a long period of time in which to become sufficiently cumulative to make its presence known by such manifestations as we have learned by experience to recognize. When the teeth thus infected are removed, almost countless capillaries are opened and quick absorption takes place, and we have all of the manifestations, such as depression, accompanied by rise of temperature, that we have in the administration of an autogenetic vaccine and usually followed by an apparent increase or rise of immunity, due to the stimulus given the immunizing mechanism, or the body-chemistry by the introduction of the protein poison.

If too many infective teeth are removed at one time the patient may have the same result that follows an exhibition of an overdose of any other poison, ranging all the way from slight depression to complete dissolution; and it therefore becomes a matter of fine discrimination to know or judge of the proper number of teeth which should be removed at one time.

In my experience these statements are not fine-spun theories, but are backed by clinical evidence amply sufficient to prove the contention. The value of vaccine therapy in many cases appears to be well established, and, inasmuch as we vaccinate our patient with his own virus when we remove infective teeth, we can allow sufficient time between extractions to give him the same benefit which would accrue, were he to receive repeated stimuli by means of vaccines artificially prepared.

TREATMENT OF CARCINOMA OF THE UTERUS*

THEODOR BRATRUD, M. D.

WARREN, MINNESOTA

The situation regarding carcinoma of the uterus is today far from a desirable one. Comparing the results reported by recognized masters from the large clinics, less than one person out of five with carcinoma of the uterus can expect a cure. As an illustration, Dr. Cobb reports that of cases admitted to the Massachusetts General Hospital from 1900 to 1914, 36 per cent were operable, and less than 50 per cent of the operable cases were living after five years. We cannot be proud of such a condition of affairs.

The work of investigators has proven that carcinoma of the uterus remains localized for a long period, and seldom forms metastases. The clinical history of most of our inoperable cases showed that all of them had definite symptoms for a long time before the symptoms were correctly interpreted.

We find two reasons for the failure of a patient with carcinoma of the uterus to seek relief at a time when it is curable. Many of these patients pay no attention to the irregular hemorrhage until cachexia and disturbed function of bladder and rectum drive them to seek advice at a time when every hope for cure is gone. In the second place, we find many patients who sought advice for early symptoms which were typical were advised that their symptoms were of no consequence, oftentimes being attributed to the "change of life"; and in many cases a local examination had not been made. If we are going to get these cases when in a curable stage, it is necessary that every woman shall know the gravity of any departure from the normal menstrual flow, until such abnormal hemorrhage is definitely proven innocuous. This can be accomplished only by means of a propaganda of cancer education that extends to every family. The Society for the Prevention of Cancer has made a start in this direction, but there is a long road ahead before the end is reached. It should be the duty of every one to join in an educational campaign for this purpose. This campaign cannot be carried out successfully without the hearty co-operation of the press and every available means.

In treating carcinoma of the uterus, it is not out of place to mention the importance of the precancerous lesion. Carcinoma of the cervix is

so rare in a nullipara that we cannot escape the conclusion that the consequences of parturition are etiological factors. Knowing the tendency of all forms of carcinoma to localize on the site of chronic inflammation, prompt treatment of all cervical lesions and inflammation needs no argument.

The routine examination of all material obtained by curettage will occasionally aid in recognizing early cases.

Hyperplastic endometritis with its frequent hemorrhages is another lesion often followed by carcinoma. When these hemorrhages continue after conservative treatment, hysterectomy is advised.

Carcinoma has been found so many times ingrafted upon uterine polypi and other types of uterine tumors that early removal of such growths should be urged.

When we come to the treatment of carcinoma of the uterus, can we offer these patients any hope of cure excepting surgery? In the light of our present knowledge, we must answer this question, "No." On the other hand, we can promise the early case cure by timely surgery.

The works of Kelly, Gauss, Schmidt, and others have shown some favorable results in inoperable cases which could not have been attained by surgery. They have shown us some favorable results in connection with surgery. In the present state of our knowledge concerning radium, we cannot offer radium as a substitute for surgery in the operable carcinomata of the uterus. It has been shown that radium has a destructive action on the cancer cell, and its use as a pre-operative and post-operative adjuvant has some value. Further investigation in this line is needed.

Röntgenologists have reported good results in some cases. On the whole, their results have been inferior to those attained by the use of radium.

The type of operation for carcinoma of the uterus depends upon the individual case. Simple hysterectomy, with or without clamps, combined with the use of the actual cautery in sterilizing the infected areas and preventing the possibility of transplants, proves satisfactory for the early case. In the obese and poor surgical risk, the vaginal operation is preferable both in cervix and

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

fundus carcinomata. Early cases of squamous-celled carcinoma of the cervix with superficial involvement of the vaginal vault, can be treated by the abdominal route with mobilization of a cuff of vagina and amputation with the cautery. Fundus carcinoma which has progressed to the stage where enlargement of the fundus can be recognized and the uterus is still freely movable, should be treated by the abdominal route, on account of the tendency of fundus carcinoma to ascend along the tube to ovary and peritoneal surface. Cases with fundus carcinoma and movable uterus, even though no enlargement can be demonstrated by palpation, where there is a history of symptoms of moderately long standing, should be treated by the abdominal route for the same reason.

The advanced cases offer a difficult problem. The radical operation in its various modes, spoken of as the Wertheim method, gives permanent results in less than 50 per cent of the operated cases. There is considerable variation in the results reported from different clinics because it is difficult to set a uniform standard of operability. In other words, cases accepted as operable in one clinic are refused operation in another. The method of Percy with long-continued application of low heat, or pasteurization, as Percy calls it, with ligation of the internal iliac arteries, promises better results. The Percy treatment has been severely criticized by able men who claim that the low-heat treatment has no advantage over the high-heat treatment of Byrne. The opponents of Percy claim that the cancer cell is not affected beyond the immediate vicinity of the cautery.

Microscopic examination of uteri excised after the Percy treatment, has failed to show any carcinoma cells. The point in dispute and upon which there is need for further observation is, Does the cautery destroy the cancer cell after it has passed beyond the uterus into the parametrium, or was the uterus fixed in the pelvis by an inflammatory process? Whatever be the answer, we can take it for granted that many cases treated by the Percy method have been transferred from the inoperable to the operable group. If the end-results of the Percy method are as favorable as the early results have been, the Percy method with its low mortality has distinct superiority over the Wertheim type of operation with its high mortality.

The treatment of advanced carcinoma of the uterus should be transferred from the hands of

the general surgeon to surgeons who have opportunity for intensive application in this particular class of work. By so doing, the men engaged in this particular field will gain greater experience in recognizing the operability of the individual case and, at the same time, will gain greater skill in treating the complicated case, with lower mortality and a larger percentage of cures.

SUMMARY

1. Public education is needed to bring the cancer patient to seek relief at a curable period of the disease.
2. At the present time, surgery offers the best chance of cure for carcinoma of the uterus.
3. Simple hysterectomy cures the early case.
4. In the treatment of the advanced case, the Percy method promises better results than any other method, though many problems are still to be solved.
5. Specialization in this field of work will bring us better results.

DISCUSSION

DR. ARCHIBALD MACLAREN (St. Paul): The statement which Dr. Bratrud makes, that one out of every five cases of carcinoma of the uterus is cured by any form of operation, does not agree with my personal experience. In a *large number* of cases, the number that are really cured is much smaller. We were all led away with our early enthusiasm. Today we think that a certain number of cases are cured, but if we wait for the "five-year limit" we find that some of our cured cases have relapsed. What I mean to say, is, that many cases will recur, and are evidently only delayed recurrences, having been smoldering along for a long time, and later break out again.

The statement that carcinoma of the uterus follows the irritation due to the presence of fibroid, I cannot clinically agree with, although we do occasionally see a carcinoma developing in what has been supposed to be a fibroid tumor. My conclusion in such cases has usually been that the early diagnosis was a mistake,—the tumor was not a *fibroid*. Some cases I have operated upon, in which I believed that I was dealing with a fibroid, were pathologically proved not of a fibroid character.

Carcinoma of the cervix and carcinoma of the fundus are two distinct diseases, and the results which we have obtained in the way of cures have been in carcinoma of the fundus, but not in carcinoma of the cervix.

The Wertheim operation appeals to us because we dissect so widely that we get the lymphatics, and it is practically the breast operation applied to the pelvis. The only difficulty with the Wertheim operation is, that the mortality is very considerably greater, and that is what makes the Percy operation preferable. The Percy operation as it was first suggested was not without risk.

When John Byrne first read his paper on the subject of "Cauterization Versus Vaginal Hysterectomy,"

everybody who heard it was shocked with the idea, and said that this man must either be a little demented or his results could not be true. One of his internes, a man who knew him well, told me that he was absolutely honest and that his results were as he described them; and, because of that fact, many of us turned to the cautery. But the trouble was, we did not submit all of our cases to the cautery. We selected the good cases for vaginal hysterectomy; we submitted the bad and hopeless cases to the cautery, and these cases were often made worse, because we did not cure the cancer, and we often did produce a vesico-vaginal fistula, so that the woman was worse off after the operation than she was before.

Percy adopted the good things in Byrne's operation. He gave us the water-cooled speculum and a good electric cautery; and, furthermore, he stated that we must open the abdomen. This is good sense, for, in the first place, when the abdomen is opened, it is possible to tell whether the case is operable or not; and, if there has been extension of the disease to the liver or the intestines, we can avoid a useless operation. The men who did use the cautery, usually used it insufficiently, almost as a rule.

When you hold the uterus in your hand, the cautery being in the uterus, and cannot feel the heat from the cautery in the body of the uterus, you know that you are getting very little effect from the cautery. In the old days, if we used the cautery for five or ten minutes, we feared the danger of a perforation.

I do not think that the Percy operation cures the cancer cells as far out in the tissues as Dr. Percy would have us believe. The cautery must reach the cancer cell direct, or else there will be a return of the disease. Probably it does change an inoperable case to an operable one at times by the absorption of the inflammatory exudate in the base of the broad ligaments. In the first operation, Percy did not advise tying the uterine arteries. One of my patients died on the eighth day from a secondary hemorrhage, when the slough came away. It was not possible to control the hemorrhage by the most thorough vaginal tamponade. Percy evidently has had some of these same experiences. There are two other cases, not my own, which I know of, where the patients died from secondary hemorrhage when the slough came out of the uterus. Following this, Percy's suggestion,—ligation of both internal iliacs and one ovarian artery,—is an excellent method to follow. It starves the growth, and does away with this great danger of secondary hemorrhage.

DR. F. A. DUNSMOOR (Minneapolis): I want to reiterate some of the things Dr. MacLaren said. First, the reason why we succeed is the difference between the types of cases which originate in the fundus and cervix,—that is, cancer of the fundus is curable, and cancer of the cervix is not.

With regard to the Percy operation: I am sure there are more deaths from it than are reported. Dr. Percy has had some unaccountable deaths occur immediately after this operation. I have come to the conclusion that the way to cure cancer at any place, is, if you cannot remove it, char it. I do not believe in boiling it. The idea that any part can be cured with cautery that you can hold in your hand I do not believe is true, neither do I believe there is anything logical with the application of heat that does not go to the point which is involved. If you introduce the cautery into the

uterus, and there are secondary deposits beyond the uterus, operation by any method is hopeless, so far as cure is concerned. It is only palliative. On the contrary, I have seen a few cases cured, which were declared inoperable. I recall one case in which the disease involved, not only a part of the vaginal wall, but the rectal wall; and, after charring, the slough came away, and the woman was alive twenty years afterwards. This was declared to be an inoperable case.

DR. R. E. FARR (Minneapolis): The question of cancer in the uterus has been so well covered by Dr. Bratrud that I think we can all accept his conclusions.

Years ago I heard Dr. John B. Murphy say that the problem of cancer of the cervix is about as hopeless as any problem with which we have to deal. His statement was that most of the cases of cancer of the cervix result ultimately in the death of the patient. This is surely true to a large extent, and the so-called five-year limit cannot be accepted as a cure.

With regard to the cautery: Since the last meeting in Washington I have paid special attention to the literature regarding the use of the cautery, and it is my belief that the Percy method has resulted in a number of deaths. I believe it is better to use it than not to use it, but there are certain bad features about it. At the Washington meeting, Leonard reported a case in which various pathological conditions throughout the body, notably ulcerations of the mucous membrane of the gastro-intestinal tract and effusions into the serous sacs throughout the body, were due to the products of the cauterization of epithelial tissue. The same findings were present on the death of a woman some days after a typical Percy operation had been done. Undoubtedly, those findings are present in many cases where the patient does not die. The same conditions prevail in an epithelial burn of the body elsewhere: if a given area is involved, death results.

We should not forget that early diagnosis is the important thing here. If every physician would learn the differentiation of malignant disease of the uterus, learn the diagnostic points, many deaths would be avoided. Occasionally I see women in whom bleeding occurs after they have reached the climacteric, some having been treated by physicians, and others never having consulted a physician. Improvement will come only from a propaganda along the line of better education of the masses and more prompt action on the part of the profession.

I have in my own experience two patients alive and well today, one eleven years and the other twelve years after vaginal hysterectomy, each for cancer of the cervix as proved by microscopic examination, so they have both passed the ten-year limit. The good results I attribute to very early operation.

DR. BRATRUD (closing): So far as the Percy operation is concerned, I do not claim that the Percy cautery destroys carcinoma cells after they have passed beyond the limits of the uterus. The Percy operation does this: In those cases in which the uterus is fixed in the pelvis, we have no means of knowing whether the uterus is fixed by inflammatory processes secondary to muscle invasion, or whether it is fixed by cancer invasion. The Percy method reaches the infection in such a way that these uteri become freely movable, are usually early operable cases, whereas, if these patients were submitted to the Wertheim operation, they would run a greater risk.

CORRESPONDENCE

DR. GREENE'S COMMUNICATION

We have had no desire to open the unpleasant controversy over the Medical School of the University of Minnesota; but when Dr. Greene's communication was received we were faced with a question that must be answered. A communication from a man of the high standing of Dr. Charles Lyman Greene in the medical profession, if such communication bears upon the work of the medical world, cannot be rejected lightly by a medical journal; on the other hand, a communication may go beyond the limits of its implied purpose. Dr. Greene's purpose is to correct, not mere rumors, but actual statements made at least by one official of the Medical School vouched for by a man of unquestioned veracity.

In view of certain circumstances, which we shall not enumerate, we deemed it wise to refer the communication to the Publication Committee of THE JOURNAL-LANCET, as other matters of like nature have been referred. The Committee requested the publication of the letter.

The wisdom of the Committee's action is strikingly attested by the recent speech, as reported in the daily papers of the Twin Cities, of Dr. Vincent at a meeting of the alumni, in which he said, in substance, that coöperation between the City Hospital of Minneapolis and the University Hospital had been denied because of petty jealousies on the part of the medical men, of course, of the city. As this sentiment has been so often expressed by Dr. Vincent, we assume that the daily papers reported his recent speech correctly; moreover, this sentiment has been expressed by members of the Medical School Faculty so often that it seems to be the only explanation they can find for opposition to their way of conducting the School. In short, they seem to think that the medical men of Minnesota who do not agree with them have no honorable motives. In view of the fact that the State Association voted unanimously against the plans of the Medical School upon which they were asked by the School to pass opinion, the indictment seems to be against a "whole people," and the absurdity of such wholesale condemnation has not, apparently, occurred to the Administrative Board or to Dr. Vincent. Dr. Greene defends the profession.—THE EDITOR.

THE PRESENT UNFORTUNATE SITUATION OF THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA

TO THE EDITOR:

Of late I have heard repeatedly of assertions that the plan for clinical expansion now advocated by the Administrative Board of the Medical School is "substantially identical" with the one presented by me to President Vincent in June, 1913, for his endorsement, with the statement that only upon that condition could I accede to his request and that of the retiring Dean, and consider favorably the acceptance of the deanship to which, after repeatedly and emphatically refusing the honor, I had been nominated by the Administrative Board.

Several days ago I received a letter from the President of the Medical Alumni Association quoting a member of the Administrative Board to this effect and asking for light.

Being ignorant of the extent to which this report has been circulated and wholly averse to having my name used in support of a plan far different from that which I then proposed, one, indeed, of which I most strongly disapprove, I take the liberty of sending you this communication.

I write with the full assurance that no man can doubt that today, as at all times throughout many years of loyal service, I stand ready and willing to serve the School's best interests and to assist in promoting its development along proper lines.

I should not serve them by indorsing or advocating this proposition or any of the modifications proposed.

At this critical period if one must speak he must speak plainly and fully as to the causes underlying the present unfortunate situation.

Formerly, by those who were privileged to aid in transforming the Medical School from a mere proprietary college into an institution, once regarded as second to none in promise of future preëminence, strict adherence to certain fundamental principles was deemed indispensable.

How far from the "proper lines" the present policies have led the Medical School may be appreciated best by a simple comparison of those of the former régime with those of the present administration.

Certain of the most prominent of the principles

and policies formerly held to be vital may be thus summarized:

First. It is a self-evident truth that no state-supported medical school can attain its full measure of success without the sympathy and willing coöperation of the physicians of the state.

Second. No medical school, whether state-supported or endowed, can succeed if it fails to secure and hold fast the approval and active support of its alumni.

Third. The standards for admission and graduation of students should be set and steadfastly maintained at the highest possible level.

Fourth. At no time should personal interest, direct or in the form of entangling alliances, be permitted to dominate the policy of the School.

Fifth. The teaching function of faculty members should be absolutely set apart from their practice, to the end that none might claim justly that the State's university encouraged or countenanced special privilege or gave to any group of men special immunities and advantages.

Sixth. The gradual attainment of proper housing and equipment for the various departments of the school, beginning with the fundamental laboratory branches and ending with the gradual and intelligent development of a fully controlled small but complete clinic dealing with none but the State's poor, properly certified by a physician as worthy of aid, permitting no improper discrimination, but affording a means of relief to county boards; a laboratory for intensive clinical teaching and research, and a means of returning to the State, in recognition of its necessary expenditures, tenfold in service.

One of the most remarkable achievements of Dean Wesbrook's administration was the maintenance of absolute harmony between the laboratory and the clinical groups, as illustrated by the unanimity with which the clinical men through many years loyally supported and actively aided the laboratory men in securing the necessary appropriations, even though this attitude involved an almost complete submergence of the most urgent clinical needs of the School.

Seventh. The establishment and maintenance of such friendly and helpful relations with the splendid municipal hospitals of St. Paul and Minneapolis as would permit at all times the fullest use of their large and varied clinical services consistent with right and justice to non-university men of special training and ability.

Eighth. The establishment of a fixed policy

with respect to the development and scope of teaching.

(A) This demanded, first, that the needs of *undergraduate* teaching be fully met, inasmuch as this represents the primary and chief function of a state university medical school.

(B) That research be promoted to the utmost degree compatible with the gradually expanding pecuniary and clinical resources of the college.

(C) That, until the first and chief function of the School was attained fully, no elaborate and expensive system of postgraduate teaching should be instituted, though short courses for practitioners might, and should be, established at the earliest possible time.

Ninth. The attainment of more intensive instruction of students through direct bedside training and by demanding half the time of certain instructors who should receive some pecuniary compensation.

Tenth. That the expansion of the laboratory and clinical facilities of the Medical School should be attained by securing the necessary appropriations, one by one, but steadily, making the character of the work done and the great and direct service given to the State the justification for legislative requests and for the active support of our alumni and of the physicians of the state of which the School was then fully assured.

These policies were followed under the helpful guidance of President Northrop and Dean Wesbrook, with the result that the School profited by the rapid progress of the University as a whole and by that magnificent momentum indispensable to a continuing satisfaction of the needs of a great and rapidly developing university, the attainment of which represented one of the greatest, if not the greatest, achievement in the history of university administration in America.

To those who had watched the steady development of the institution through storm and stress, it seemed as if this wonderful impetus could never be checked and that the future of the University was assured.

With Dr. Northrop's withdrawal came the almost complete arrest of clinical development and lean years for the University as a whole, chargeable, not to legislative parsimony, as has been stated so persistently, but to a complete change of policy, which from the outset filled the hearts of experienced men with forebodings, grave, indeed, but falling far short of any realization of the great damage now clearly apparent.

Inasmuch as the most striking and inclusive example of the reversal of former policies and the one most damaging to the Medical School and the University as a whole, is found in the extraordinary affiliation of the University of Minnesota with the Mayo Foundation it becomes necessary to review some of the facts set forth so fully two years ago.

This proposed affiliation is of a nature unique in the annals of medical education.

This private corporation itself is inseparable from the Mayo firm and the business of the firm for the perpetuation of which it was avowedly established, and is and ever must be under its Articles of Incorporation absolutely controlled in perpetuity by the members of such firm and their successors, all of whom are so related by ties of blood or marriage as to form a family group.

This firm constitutes the self-perpetuating Board of Trustees, operating the Foundation through a secondary board, the members of which almost without exception they nominate, elect, and absolutely control. Its place of business is, and ever must be, Rochester, Minnesota, and from this point and under the control and direction of the firm all of its activities are directed.

The fund for the endowment of the firm ("Mayo Clinic") through the Foundation, has been placed in the hands of three laymen, and, if the present temporary arrangement be made permanent, such fund will be turned over by them to the Regents of the University, who will act gratuitously only as trustees of the fund, and will possess beyond that, with relation to it, merely the powers of an auditing board.

It should be understood clearly that the Regents would merely replace the trustees now holding the endowment fund, not those controlling the affiliate body (Mayo Foundation) and its activities.

The firm retains its control even under the permanent plan outlined, and, acting as trustees of the Foundation in perpetuity, reserves to itself the all-important "initiative" with respect to the nomination of teachers, the expenditure of funds, the determination of the character and scope of the work it shall undertake, and the apportionment of the duties and the compensation of the men serving alike its business interests and activities and the research work and graduate teaching with which these are inextricably fused. This fusion of the business and research activities of the firm, its employes and its graduate students

is sufficiently obvious to anyone familiar with the practical operation of the Mayo Clinic and is clearly shown by the statement of the Administration Committee seeking to prove the contrary (JOURNAL-LANCET, March 15, 1915. See p. 140, second column under "Method of Separating the Foundation from the Clinic".)

In other words, the Regents of a State University would enter into perpetual affiliation with a partially self-endowed private firm to which it grants academic rank while leaving it practically the full control of its own affairs.

Others seeking the same privilege have received an emphatic refusal.

The true nature of the proposed agreement was obscured originally by the legal fiction characterizing this conveyance of the endowment fund of the firm (under the name of the Foundation) as a "gift" to the Medical School of the University of Minnesota, and it was persistently so characterized by the administrative authorities of the University. Indeed, a most thorough-going and nation-wide press campaign conveyed the same false impression to the general public, but it is to be assumed from present developments at the University that at this time at least its officers have come to realize the phantasmal nature of the so-called gift and the fact that it cannot under any conditions be used either now or in the future to relieve those urgent necessities of the Medical School on the Campus of the University which are now being made the excuse for another attempted departure from sound administrative policy.

In the last circular letter issued by a committee opposing the adoption of this scheme by the University, the present so-called temporary arrangement was very fitly termed "A Phantom Gift and a Trial Marriage," and, if one may judge by the statements of many well-informed men working under the provisions of this arrangement, even now all predictions and assertions made at that time are well-nigh fulfilled.

As might be expected in the case of a Board of Trustees dealing with a matter vitally affecting one of its own members there seemed to be a lack of appreciation of the need of business-like treatment of the affiliation proposal, as is illustrated by the fact that *long after its approval by the Administrative Board* a committee of the State Senate found that no document bearing the signature of the Mayo Foundation was in the possession of the University authorities and forthwith dispatched the Dean to Rochester to obtain a proposal in proper form.

Incredible as it may appear, favorable action upon this extraordinary proposition was taken against the earnest opposition of an overwhelming majority of the clinical teachers of the school (in large part disfranchised by the peculiar constitution of the "general faculty").* against the earnest opposition of nearly nine-tenths of the medical practitioners of the state, the known antagonism of a like proportion of the Medical Alumni, and even of an adverse resolution of the Board of Directors of the General Alumni Association. Indeed, this violation of principle and precedent aroused widespread opposition without as well as within the ranks of the medical profession, and the upper house of the Legislature passed a bill, introduced at the suggestion of several of its members, and only at the last moment, expressing its disapprobation of the plan.

So strong was the adverse sentiment that against all precedent this bill was passed easily, even after one of its authors had abruptly withdrawn and moved that the bill be killed, because of the mistaken impression conveyed by a resolution of the Board of Regents, sprung suddenly at the time the bill came up for final action, which purported to pledge them to act permanently only in event that complete control of the Mayo Foundation was granted them, an assumption wholly unjustified by a careful analysis of the said resolution.

RESOLUTION

THE UNIVERSITY OF MINNESOTA

Meeting of the Executive Committee Minutes

April 19, 1915

A meeting of the Executive Committee was held in the President's office, Monday, April 19, 1915, at three o'clock.

Present: Regent Nelson, presiding; Regents Butler, Partridge, Schulz, Snyder, Sommers, Vincent.

By a unanimous vote the following resolution was adopted:

Although the Board of Regents has not as yet officially considered a proposed affiliation with the Mayo Foundation, in order to make clear the policy of the Board, be it voted:

*The whole-time laboratory workers for the greater part then believed apparently that an actual gift to the Medical School was involved, also that their laboratories would be filled with workers from the Mayo Clinic. Neither of which assumptions can now be maintained. It was almost wholly by the votes of laboratory men that this plan was approved by the General Faculty. Under the peculiar constitution of this body no man could vote unless he ranked higher than "Assistant." All laboratory men had a vote by virtue of the fact that no laboratory worker, however subordinate in rank, carried the title of "Assistant," all being ranked as "demonstrators" or "instructors" from the beginning of their service. The many clinical "assistants" had no vote, merely because of this arbitrary distinction.

First, that in any event, the Regents do not enter into any permanent arrangement within four years.

Second, that the Board enter into no permanent affiliation which does not give the Regents complete control *within the specific purposes of the Foundation*, of endowment funds, administration and teaching.

(The italics are mine.—C. L. G.)

"Disingenuous" and "misleading" were the mildest of the terms applied to this resolution by the several prominent attorneys to whom it was submitted, who pointed out that the words "within the specific purposes of the Foundation" absolutely negated the assertion of complete control, as the articles of incorporation, the trust agreements, and the proposed contract between the two bodies clearly avoided any such control by the University authorities.

Throughout the entire campaign the Administration showed a curiously complete obliviousness also to the most elementary principles of law as relating to the question of control.

As a result we saw it stated in all seriousness that, even under *perpetual* affiliation with a firm whose future could not be predicted, "adequate control" was attained through the almost purely nominal function of "approval" and "appointment" on the part of the Regents as contrasted with the exercise of *true control* as expressed in the power of "initiative," direct administration, and "dismissal" possessed by the Mayo firm with respect to the Mayo Foundation.

Indeed, a curious lack of attention to the simplest of business principles characterized the treatment of the proposition, and but recently a member of the Board of Regents is said to have declared that in the event of the deterioration of the "Mayo Clinic," which he regarded as certain at some time in the future, the Regents would merely remove the Mayo Foundation to the University Campus.

Any lawyer of ordinary intelligence who had read the contract proposed as a "basis" for permanent affiliation, together with the Articles of Incorporation and the Trust Agreements, which are the determining factors, would tell him that he might as well hope to remove the Rock of Gibraltar.

The action of the State Senate also was wholly disregarded by the Board of Regents.

With respect to the so-called "hearings" granted by the Regents, the writer will quote from an editorial utterance appearing in the official organ of the General Alumni Association, namely, the *Alumni Weekly*, under the date of June 14th, 1915:

It is true that the *Weekly* did (solely out of consideration for the Regents) fail to say anything about the extremely partisan attitude which a member of the Board took at these various hearings, cross-examining, badgering, and repeatedly attempting to trip up and to confuse with mere technicalities speakers who advocated the passage of the bill and who opposed the Mayo proposition.

It is a fact that many who would have been glad to appear at later hearings, to speak against the Mayo proposition, have been deterred from doing so because they would not subject themselves to such a humiliating experience.

At the public hearing (committee of the whole of Board of Regents) last Saturday, men who were present were shamefully abused and attacked; their motives were impugned and their loyalty to the University questioned in a way that could not have been more marked had there been a deliberate and prearranged plan to publicly humiliate them.

It is a sorry day for the University when citizens are treated so that they prefer to forego what they feel to be their duty, rather than to run the danger of being humiliated when attempting to speak their minds upon matters upon which the public has been asked for advice. The University is in a bad way when such a state of affairs exists and if the alumni do not speak out in protest there is no one else likely to speak.

This statement portrays but feebly the intolerant and partisan character of these hearings which should, of course, have been of the most dignified and judicial character.

Exactly the same lack of judicial spirit and balance was manifested at the meeting of the General Faculty of the School called to secure the approval of the affiliation as expressed only by an incredibly crude plan, undeveloped, vague or impossible in details, and failing to exhibit the illuminating Articles of Incorporation of the so-called Mayo Foundation, its by-laws, or the vital trust agreements.

To this day the two latter never have been made public and, therefore, the Administrative Board of the School and the General Faculty alike were not informed as to the true nature and scope of a plan, opposition to which, according to the statement of the administrative head of the University, could represent only "petty jealousy."

One of the more humorous aspects of this extraordinary meeting is found in the fact that, whereas no hesitancy was shown in declaring opposition to the affiliation a matter of "petty jealousy," the presiding officer refused to put a motion, rightly and courageously declaring it to be the sense of the meeting that the matter ought not to receive consideration until Dr. Mayo had resigned from the Board of Regents.

Throughout the entire campaign the opponents

of this atrocious plan were again and again charged insultingly by the spokesmen of the Administration with petty jealousy, although, as stated previously, the opposition included the greater number of clinical men who had for years given loyally of their best in love and devoted service to the school, an overwhelming majority of the alumni, the greater part of those leading practitioners who in the past had again and again rallied to the support of the School and of the University as a whole, and, in addition, a host of lawyers, clergymen, laymen, and a substantial majority of the State Senate.

In such haste were the Regents to bestow academic rank upon the Mayo firm, and professorships of some grade upon almost every member of the Mayo staff, that even requests for postponement from many sources, including one from the Directors of the St. Paul Association of Commerce, were disregarded.

Then followed, quite appropriately, a flat denial of academic freedom in the form of a "gag resolution," which as passed by the Board of Regents, and to this day unrescinded, reads as follows:

That the best interests of the University require that the new plan for developing the graduate medical work of the University should not be opposed hereafter by any member of the faculty of the Medical School, but, on the other hand, should have the loyal support of all members thereof.

Despite a somewhat free interpretation of this extraordinary enactment by the President of the University, under the pressure of the just indignation it excited and many resignations, actual or threatened, this still remains in effect to humiliate the many opponents on the Faculty of the plan who still find it possible to work under its drastic provisions, but as an insult to every member of the Faculty of the Medical School and an offense to every true lover of freedom in thought, speech, and action in public educational institutions.

Not the least remarkable thing in connection with this surrender of the Medical School to private interests is the fact that throughout the proceedings Dr. W. J. Mayo, Consulting Medical Regent, remained upon the Board of Regents, which was considering his proposal, and still remains there, at once possessing as "Consulting Medical Regent" what has been termed "autocratic and determinative power" with respect to the policies and personnel of the School, and supreme authority with respect to the activities of the Mayo Foundation.

So obvious and so generally recognized is this impropriety that no extended comment is required.

It would appear from the foregoing and from statements made by Faculty members that not one of the principles underlying those policies of the School which gave it its former high standing and its promise of future greatness remains inviolate.

The present plan for clinical development, urged persistently in spite of the resolutions of the State Medical Association and of the Society of Medical Alumni condemning all pay-practice upon the University Campus, represents not only the antithesis of all former policy, but also a distinct breach of faith.

The intense opposition excited is wholly natural and readily explainable by any one who knows the history of the Medical School.

From the time the plans for University hospitals were laid until 1915, the practitioners of the state and Alumni of the Medical School were assured that the beds of the University hospitals would be free to the sick poor of our state and open to them alone and that all pay-patients were rigidly excluded from the University Campus.

It will be remembered as a significant fact that by legislative enactment all beds in the present University Hospital are declared free in perpetuity.

Naturally, one would assume this to be a peculiarly unfortunate time to break faith or add fuel to the flames of resentment already kindled in the breasts of those upon whose sympathy and coöperation any state-supported institution must depend.

It is merely an attempt to ameliorate the evil effects of the violation of one principle by the violation of another, for, as a matter of fact, the last is but the corollary of the first.

We read that a hospital addition of 355 beds capacity is planned, all of which shall be pay-beds (280 of the "per-diem" variety, for which the payment of ten or twelve dollars per week assures free medical service), and 75 rooms and beds for patients paying full fees both to the hospital and to a small group of teachers, who shall be provided by the State University, free of all expense, with offices, assistants, stenographic service, and every facility and appliance for their pay-patient practice.

The question of compromise through modifications in details, which has been made so prominent, is wholly negligible. The violation of prin-

ciple is not concealed or ameliorated by concessions with respect to the percentage of pay-patient beds, the question as to whether these teachers take the receipts, the putative source of salaries paid these practitioners in lieu of such receipts, or the nominal distribution or particular application of fees received.

None can doubt that the mere proposal with the breach of faith, false policy, and violation of principles it involves, has aroused general opposition and resentment at a time when everything should be done to conciliate and draw to the support of the School those elements vital to its prosperity.

The continued agitation of the pay-patient plan represents a curious inability to appreciate the incongruities of a situation involving a request that the very individuals who have been denied even the right of protest without insult, shall become supporters of and participants in the promotion of a plan which again violates their sense of right, justice, and simple common sense. Such a policy is inexplicable.

One feels that the basic weakness of the plan has been overlooked, namely, that the necessity asserted is one which could not and need not now exist were it not that proper and timely requests for administrative action concerning appropriations had been denied and that the forces normally available for support had been alienated, deliberately and cynically.

No one surely can deem such a one wise or safe for a *State University* and many will remember that we were warned against it by the Dean of Michigan University where, mistakenly, it has been attempted.

As a matter of fact all necessary extensions to the University hospitals could and should have been obtained long before this time, and the chief thing which has stood in the way up to the present has been the failure of the President and Regents even to ask for the money so urgently needed at the time when their request would have received the necessary support from the Alumni and from the physicians of the state, namely, the first two legislative sessions following President Vincent's coming.

No attempt to place the responsibility for deficient appropriations upon the Legislature can stand for one moment in the face of what was accomplished under former régimes under difficulties infinitely greater than any that need have been encountered by his successor.

The figures which are adduced by the propo-

nents of the present plan in support of their contention that adequate legislative appropriations are unattainable do not stand analysis when considered in their relation to the extension of the *hospital facilities* of the School.

One is likely to be misled by the statement that "the medical plant of the University has already cost approximately \$1,100,000, of which amount \$157,000 came from private bequests and gifts," and that "the present annual budget of the Medical School (including overhead charges) is \$150,000."

This may all be true, but the amount represents in the greater part the sums necessary to house and maintain the fundamental laboratories in the manner absolutely necessary to meet the demands of modern medical training in anatomy, physiology, pharmacology, materia medica, bacteriology, and pathology.

It should be remembered also that to a very large extent the laboratories of the Medical School serve other colleges of the University, and from the amounts named should be deducted the value of the old buildings, vacated as the Medical School was removed to the new Campus by the Regents, which have served to house other Colleges and saved the State certain large expenditures.

In any event the amounts expended demand no apology, but merely represent an attempt to meet properly an imperative need.

The State of Minnesota has undertaken to establish a modern Medical School upon the University Campus and the sums devoted to that purpose have served to bring it to its last and perhaps most important stage, the completion of a clinical laboratory.

As a matter of fact, the expenditures of the State for hospital teaching have been extremely modest and wholly out of proper relationship to the amounts properly asked for and readily appropriated for the housing and maintenance of the laboratory branches in medicine during happier days.

The present hospital buildings now contain 194 beds and cost the State of Minnesota \$40,000 for the building, and \$42,000 for equipment.

It should be remembered that money for the site was contributed by the citizens of Minneapolis, and the balance of the building fund was a gift to the Medical School obtained for it by members of its own faculty. In addition, \$50,000 has been spent for a service building, and \$100,000 should have been obtained long since for the School for Nurses.

It was stated by the Administration that "to double the present hospital facilities would cost for buildings \$600,000.

This figure doubtless represents an ideal, but is most misleading as respects the satisfaction of the urgent needs of hospital expansion, for 106 free beds might be provided, and a nurses' home erected under the expenditure of a sum not exceeding \$360,000, including an addition to the present service building and complete equipment of the three structures.

The expense of maintenance represents a considerable amount of money, but not one-fifth of it is properly chargeable to medical teaching; and in the mind of no one can there be any question that the entire amount and much more is returned directly to the State in the service represented by the care and rehabilitation of its sick poor, whose needs are no less urgent than those of the insane, defective or crippled who are at present ungrudgingly cared for by the commonwealth.

Moreover, this is the one department of the University in which nearly the entire amount of clinical teaching service has represented during many years a voluntary gift to the State, for only a fraction of the men of the clinical group receive any remuneration whatever, and to none are salaries paid which are at all commensurate with the value of the time and service given. The clinical department of the University is certainly the last which the State would penalize if the matter were presented properly with the backing which once was, and must again be made, available.

Finally, I would state again that in my letter to President Vincent, referred to at the beginning of this communication, I did make his endorsement of hospital expansion and some pecuniary recognition of half-time service of the staff the condition upon the acceptance or rejection of which my action with regard to the assumption of the Deanship of the School would depend. I asked that a nurses' home be built and that the hospital service be extended to 300 beds, and this figure, I believe, would now be adequate to satisfy the urgent needs of the school.

Never, however, did I suggest or consider for a moment the introduction of the pay element into the hospital or anywhere upon the Campus.

On the contrary, together with all of the other members of the Administrative Board, and with the full sympathy and support of every clinical teacher in the School, I asserted repeatedly, in public and in private alike, the absolute necessity

for the maintenance of a policy which would keep the hospital service free and debar all pay-patients from the University Campus.

It was pointed out again and again that not only would any other method inevitably involve dissatisfaction on the part of the patients, divided into classes according to their pecuniary resources, with the resultant complaints and recurring legislative investigations thereby induced, but also that the introduction of pay-patients into the work of the School on the Campus would violate a vital principle by placing a *state* university in an attitude of direct competition with thousands of taxpayers, lay and medical, who support and in part own it, and thereby create animosities which would inevitably endanger its growth and development.

That which is wholly possible for the endowed medical school may be impossible for one state-supported.

It would seem that a fatal inability to differentiate the state-supported from the privately endowed institution, with the inevitable result, the antagonism of those whose whole-hearted support is indispensable, constitute the chief source of the state of suspended animation into which both the Medical School and the University itself have fallen.

I believe today as always, in the necessity for the extension of the University Hospital, the possession by it of the ideal clinic for intensive teaching, one wholly free and completely controlled, to which must be added free access to a fair and just proportion of the beds of the great municipal hospitals with their invaluable supplementary clinics, embracing cases of emergency, contagious diseases, and a larger percentage of varied acute ailments than is likely to be available on the Campus.

The heads of at least the two major departments should be *generously* salaried full-time men and, if possible, be relieved of the burdens of pay-practice, for they must bear a tremendous load in the administrative duties of a large department and yet be productive in research and give much time to teaching.

To devote one's life to the care of the sick poor, to research, and to teaching, under an adequate salary, represents the satisfaction of the highest ideal of the medical investigator.

The argument has been raised that contact

with pay-patients is a necessary part of the training of teacher and student alike. The former requirement is fully met by the fact that 95 per cent of the clinical teachers are also practitioners. The latter does not apply to an institution in which the poor always have been, and must continue to be, treated with exactly the same courtesy and consideration that would be shown the millionaire.

For the Medical School the past six years have not been lost merely, but have represented a period of continuing and progressive demoralization of what was once one of the most loyal, energetic, and united of medical teaching bodies.

These years have seen also the destruction of unified and enthusiastic Alumni support, the alienation of an overwhelming majority of the physicians of the state through a calamitous entanglement of the Medical School in an alliance of the State University with a private firm of physicians headed by the Medical Regent, in violation of sound principle and of all precedent.

As an alumnus of the school, and one who during many of the best years of his life gave much of love and service to his University, I venture the hope that any and all of the obstacles now preventing the fullest confidence and support of its alumni and of the practitioners of the state may be removed by such remedial action on the part of the President and Board of Regents as will prove that the University Administration values their opinion and desires their good will, sympathy, and coöperation.

Respectfully,

CHARLES LYMAN GREENE, M. D.

St. Paul, Minnesota, Feb. 10, 1917.

N. B.—Since the above was in type, the daily press reports that the University has asked the Legislature for \$200,000 for a building for a contagious hospital. This amount is only \$160,000 less than would be required to build and equip a general hospital addition containing one hundred or more beds, a nurses' home, and an addition to the service building.

Assuming this request to be correctly reported and a genuine one, it seems incredible that such an amount should now be sought for dealing with only one type of disease while the admittedly urgent need relates to the combined general and specific clinics.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

W. A. JONES, M.D., EDITOR

ASSOCIATE EDITORS:

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W. L. KLEIN, Publisher

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

MARCH 1, 1917

LEGISLATORS' OPINIONS OF MEDICAL MEN IN NORTH DAKOTA

We have received from Bismarck, N. D., House Bill No. 276 and House Bill No. 68. The latter is printed herewith in full in order that its significance may be fully understood by every medical sympathizer. It shows, too, in a way what the average legislator thinks of the average doctor or surgeon. If these bills could by any possibility pass, most of the doctors of North Dakota would emigrate. House Bill No. 68 is not only very skeptical of the ability of the medical man, but it puts him in a position where he would hesitate to perform an operation of whatever nature or of whatever necessity.

House Bill No. 276 is a fee bill, and it is stringent in every way and allows no latitude whatever. The largest fee permitted under this bill is \$65 for trephining for drainage in meningitis. There are a few operations, such as excision of the shoulder, hip, or knee joint, for which the surgeon is permitted to charge \$50, also for the excision of an organ, and for all laparotomies. For some strange reason they have permitted the injection of antitoxin into the frontal lobe of the brain in tetanus, and have classified that as a \$50 job. They allow for the extirpation of a malignant tumor only \$20.

They have one curious item under the heading of "Incision for removal of cyst \$5," and make it so specific it is presumed that the cyst removed after the \$5 incision is made, may be charged for accordingly. The radical cure of abdominal hernia brings \$35, and a mastoid operation costs \$25. The fee for amputations is \$35, except for fingers and toes, which are limited to \$5.

Fortunately, neither of these bills has been reported out of committee, and it is quite likely that they have been killed there; and, if so, North Dakota is safe, from a medical point of view, for another two years.

The North Dakota medical profession introduced a bill to establish a State Department of Health to provide for the promotion of public health, the welfare of children, the promotion of sanitary measures, making sanitary surveys, and the enacting of a sanitary code. This bill was promptly killed when it was introduced in the House. This is further proof of how legislators feel toward the efforts of medical men.

Be it Enacted by the Legislative Assembly of the State of North Dakota:

SECTION 1. That it shall be the duty of every person who practices medicine, surgery or obstetrics in this state to conspicuously post and display in the waiting room of his office a bill or statement showing the fees charged by him for treating various diseases, and for performing surgical operations, obstetrics and other medical work. No person practicing medicine, surgery or obstetrics shall charge more than fifty cents per mile for the first twenty miles and not more than twenty-five cents per mile thereafter for every mile actually and necessarily traveled to attend a patient.

SEC. 2. It shall be the duty of every physician and surgeon who performs a surgical operation, whenever requested by the person on whom the operation is performed, or by the parent or guardian of such person, to send the matter, tissue or substance cut out or removed from the body of such person to the medical college of the State University of North Dakota, together with the name and address of the person upon whom the operation was performed. Said matter, tissue or substance shall be sent in tubes, vessels or containers tightly sealed and thoroughly disinfected. Upon its receipt the Dean of said Medical College shall cause an examination thereof to be made to determine the nature of the disease, and when the examination has been completed he shall notify the person upon whom the operation was performed, or his parent or guardian as the case may be, as to the result of the examination. The fee to be charged for making such examination shall not exceed the cost thereof.

SEC. 3. Any person practicing medicine, surgery, or obstetrics who violates the provisions of this act shall be guilty of a misdemeanor and shall be punishable by a fine of not less than ten dollars nor more than fifty dollars.

CHIROPRACTORS' BILL IN THE MINNESOTA LEGISLATURE

The attention of the medical profession of Minnesota is called to the proposed bill for chiropractors which is before the committee on Public Health and Pure Food in the House of Representatives, and which will go before the Committee on Public Health in the Senate before long. It is advisable that physicians write to their representatives and express their opinions of this bill, which provides for the creation of a new board of chiropractors. The arguments against the bill are the insufficient preliminary education, the short time in which these men are trained and graduated, and permitted to practice without going before a uniform examining board; that is, it is no more than fair that all men or women who practice the healing art should be subjected to the same examinations that we physicians are obliged to undergo.

A list of the committee is printed herewith, and a letter addressed to the State Capitol will reach any one of them; or the letter may be sent to their home addresses.

Name	District	Home Address	County
Bjorklund, A. E.....	37	St. Paul.....	Ramsey
Greene, T. J.....	37	St. Paul.....	Ramsey
Nimocks, F. E.....	30	Minneapolis....	Hennepin
Shipstead, H.	47	Glenwood	Pope
Pittenger, W. A.....	58	Duluth.....	St. Louis
Hulbert, C. E.....	36	Minneapolis....	Hennepin
Brown, L. D.....	53	Little Falls....	Morrison
Konzen, W. J.....	67	Hallock.....	Kittson
Orr, E. E.....	51	Wadena	Wadena
Norwood, F. F.....	12	Balaton	Murray
Anderson, A. V.....	19	Goodhue	Goodhue
Lang, Fred	35	Minneapolis....	Hennepin
Marschalk, Paul	67	Warroad	Roseau

MINNESOTA'S RESTRICTIVE MEASURES

Minnesota is really coming to the front in some of its health promotion bills, and House File No. 181, introduced by Mr. Siegel, is a bill for an act to improve the sanitary condition of all work-places, and places of employment, to prevent industrial or occupational diseases, to authorize the State Board of Health to condemn the use of buildings or structures that are a menace to health of persons employed therein, and to make rules, regulations, and orders in respect to the sanitary condition of work-places, and to require physicians to report industrial or occupational diseases to the State Board of Health, providing penalties for violation of the act. This is a

good measure, and is aimed to take care of many industries, and notably camps in various parts of the state. Heretofore the Board of Health has had no opportunity to regulate these industries, as they have been under some other board.

A companion bill of House File No. 181 is reported to have been killed in the Senate by the Public Health Committee.

House File No. 170, introduced by G. W. Rodenberg, is a bill for an act relating to the inspection of meat and meat food products, prohibiting the sale of unwholesome meat, providing for more sanitary conditions in slaughter-houses, and fixing penalties for violations of this act. The bill in itself is not perfect, but it aims to correct an evil which has long existed.

House File No. 224, introduced by Oscar Seebach, is a bill for an act prohibiting the sale of snuff in the State of Minnesota, providing for the enforcement thereof, and providing penalties for its violation. This is also a desirable measure, and will do much to protect the unfortunate victims who are snuff-users. Snuff-produces all sorts of physical disorders, as well as mental conditions, and is probably as narcotic in its effects as alcohol or other drugs.

House File No. 69, introduced by Mr. Bernard, is to amend Section 4640 General Statutes 1913, relating to powers, duties, and rules of the State Board of Health. It includes, among its amendments, the application of regulations for the preservation of public health that are not now in the health bill. It also regulates the manufacture into articles of commerce, other than food, of diseased, tainted, or decayed animal or vegetable matter; the business of scavengering, and the disposal of sewage; the location of mortuaries and cemeteries, and the removal and burial of the dead; the management of lying-in houses and boarding-places for infants, and the treatment of infants therein; the pollution of streams and other waters, and the distribution of water by private persons for drinking and domestic use; the construction and equipment, in respect to sanitary conditions, of schools, hospitals, almshouses, prisons, and other public institutions, and of lodging-houses and other public sleeping-places kept for gain; the treatment in hospitals and elsewhere of persons suffering from communicable diseases; the disinfection and quarantine of persons and places in case of such disease; and the reporting of sickness and deaths therefrom.

Minnesota will continue to maintain its high standard of public health measures if these bills

are passed with such modifications as are necessary for their perfection.

IS LEGISLATION AGAINST FEE-SPLITTING DESIRABLE?

The attached draft of a bill has been sent to a Minnesota Senator with a request that he introduce it in the Senate. He called upon the physicians in the Senate for their opinions, and they, in turn, call through us for the opinion of the physicians of the state. With proper amendments, such, for instance, as a provision to revoke a physician's license if convicted, the bill would be an excellent one.

If the physicians of Minnesota want this bill to become law, they must take notice of it and endorse it, both individually and in their societies. Here is the draft of the bill:

A Bill for an Act to Prohibit the Division of Fees by Physicians and Surgeons.

Be it Enacted by the Legislature of the State of Minnesota:

SECTION 1. It shall be unlawful for any physician or surgeon to divide fees with, or to promise to pay a part of his fees to, or pay a commission to any other physician or surgeon or person who calls him in consultation or sends patients to him for treatment or operation.

Sec. 2. Any physician or surgeon who pays or receives any money prohibited by this act shall be punished by a fine of not to exceed one hundred (\$100) dollars or imprisonment in the county jail not to exceed ninety (90) days.

Sec. 3. This act shall take effect and be in force from and after its passage.

When we first read that such a bill was to be introduced in the Minnesota legislature, we wondered what the author expected to accomplish in this way against an evil whose existence is known, but whose whereabouts no one can ascertain. We did not, however, assume that the friends of the bill were without hope of accomplishing some good; and we are glad we did not, for we now know that such a law will do good from the day of its enactment. Our knowledge is based upon a card which a South Dakota physician sent us. This card reads as follows:

Associate Physician's Card
....., M. D.

Dear Doctor:

This card entitles you as associate physician to a fair participation in all fees from patients referred by you with introduction to the Lawrence Sanatorium, Minneapolis, Minn.

W. D. LAWRENCE, M. D.,
President.

Date, 2-17, 1917.

This card was sent in a letter signed in ink by

"W. D. Lawrence"; and two cards of introduction were also enclosed, whose use would identify the patient to be robbed by Dr. Lawrence and his "associate member" of the Lawrence Sanatorium.

Let us have the proposed legislation.

MISCELLANY

A MISUNDERSTANDING OR A MISREPRESENTATION

The following letter, in a slightly different form, was sent to a few physicians in Minnesota, especially to the health officers. Its importance to every physician in Minnesota seems to justify its further circulation by publication in these columns:

Office of
DR. W. A. JONES

Physicians and Surgeons Building
Minneapolis

A letter was sent out under date of February 13 by Dr. I. J. Murphy, Secretary of the Minnesota Public Health Commission, and also Secretary of the Minnesota Public Health Association, asking support for H. F. 35 and S. F. 13, "A Bill to Reorganize the State Board of Health," with the statement that this bill was emphatically endorsed by me.

It must be understood definitely that the Minnesota Public Health Association has nothing whatever to do with the Minnesota State Board of Health, but is purely a voluntary subscription organization; also that the Advisory Commission on Tuberculosis is a distinct Department of the State, having no connection with the State Board of Health.

As president of the State Board of Health I appeared before the Committee on Civil Administration at a hearing of this bill, and, in direct opposition to what Dr. Murphy has said in his circular letter, emphatically objected to the reorganization of the State Board of Health, as provided in this bill, first, because there is no need nor any demand, except on personal grounds, for the abolishment of a board which is making a great record for efficiency; and, secondly, because reducing the Board from nine to five members might make it difficult to obtain quorums at either regular meetings or meetings of the Executive Committee of the Board, and would not provide for as good representation from different sections of the state as now exists.

I objected also to the appointment of the Commissioner of Health for short terms by the Governor, on the ground that it would introduce politics into the Board, a thing that has never existed in its history. I made other objections to minor matters in the bill.

I also objected to the limitation of salary of the Commissioner to \$4,500, because I felt that the Board, however created, should be permitted to select the Commissioner and fix his salary.

In spite of statements to the contrary by Dr. Murphy and Dr. Taylor, the Minnesota State Board of Health stands fourth in efficiency in the United States while

holding only sixteenth place in appropriations, this exclusive of all appropriations in this or other states devoted to tuberculosis sanatoria and their maintenance.

I find it necessary to send out this statement of facts in order to counteract the misstatements and misrepresentations made by the letter of Dr. Murphy above referred to and to show that his support is against, rather than for, the passage of this bill, and that any interference with the workings of the present State Board of Health has not been indorsed by me as its President nor by said Board.

Very truly yours,

W. A. JONES,

President Minnesota State Board of Health.
February 19, 1917.

IN MEMORY OF DR. ARTHUR C. ROGERS

We, a committee of the Minnesota Neurological Society, deeply affected by the death of Dr. Arthur C. Rogers, one of our members, on January 2, 1917, desire to make record of our personal loss and, in a larger sense, of the loss which medical science and humanity has sustained in his death.

As Superintendent of the School for Feeble-Minded at Faribault for thirty-one years, Dr. Rogers has given to the State of Minnesota and its people a service equalled by few men. Entering on his duties at the time when the institution had one building and fifty inmates, he saw it grow under his fostering care, to an institution having sixteen hundred inmates, employing three hundred teachers, and recognized the country over as a model of its kind.

Not only was Dr. Rogers the inspiring spirit in every measure that could make happier the lives of the many dependents committed to his care, but he also maintained an unceasing interest in the expansion of the clinical work of his institution. Recognizing the importance of preventive measures in the development of mental degeneracy, and that these could be properly based only on an accurate knowledge of the family histories of inmates, he has for several years past, through field agents, conducted an unexampled inquiry into family histories, and his researches in this line have won him national recognition. Though the very nature of the ailment with which he dealt prevented a cure, his aim was always to develop in his charges the highest degree of mentality and efficiency possible, and his chief interest seemed always in the training-school of his institution. Under his direction an accurate study of the mental ages of patients has for years been made, and at all times he carried on an organized and systematic research in everything pertaining to the art and science of medicine as relating to defective children.

His field of usefulness, however, was not limited to his own institution, and through his long superintendency he was always a prominent figure in every charitable and social movement in the state. At different times he served as president and secretary-treasurer of the Minnesota Academy of Social Science, as president of the Minnesota Conference of Charities and Correction, and as a member of the commission appointed to revise the laws of Minnesota relating to children. In the American Medico-Psychological Association he was a prominent member, a wise and progressive counselor, and a frequent contributor to the program. His public

spirit was well shown in his willingness at all times to present the cause of his wards, and he was recognized throughout the state as an enthusiastic and interesting public speaker.

As a man he was honest and sincere, and, to a very unusual degree, he merited and maintained the highest confidence and esteem of his patients and his many employees and his associates in every field. In his long sickness he was always hopeful and courageous, and in his death he leaves behind him the memory of a true friend, a good citizen, and an honored member of his profession.

ARTHUR S. HAMILTON, M. D.
C. EUGENE RIGGS, M. D.

BOOK NOTICES

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures and especially prepared original articles on treatment, medicine, surgery, etc. Edited by H. R. M. Landis, M. D. Volume iv, twenty-sixth series, 1916. Price \$2. Philadelphia and London: J. B. Lippincott Company.

The fourth volume of the International Clinics, the last of the twenty-sixth series, for the year 1916, has been received.

It contains a number of articles well worth the attention of the reader, who will find in them much of practical value on the subjects of which they treat.

—Stuart.

GENERAL MEDICINE, edited by Frank Billings, M. S., M. D., head of the Medical Department, Rush Medical College, assisted by Burrell O. Haulston, A. B., M. D., resident pathologist of the Presbyterian Hospital, Chicago. (Practical Medicine Series.) Cloth, price, \$150. Price of the series of ten volumes, \$10.00. Chicago. Year Book Publishers, 1916.

This volume reviews the literature of the preceding year with the clinical studies of the following topics: infectious diseases, diseases of the chest, diseases of the heart, diseases of the blood vessels, diseases of the blood and blood-making organs, diseases of the ductless glands, metabolic diseases, diseases of the kidneys, and carbon-monoxide poisoning. References of the abstracted articles are appended.

To the general practitioner without ready access to a general library, and to the specialist who wishes to keep in touch with other branches of medicine, "The Practical Medicine Series" is always a good investment.

—GARDNER.

REPORTS OF SOCIETIES

GOODHUE COUNTY SOCIETY

The annual meeting of the Society was held at Red Wing, on January 4.

After luncheon was served at the St. James Hotel a business session was held at the Commercial Club rooms. The names of Dr. G. O. Fortney, of Zumbrota, and Dr. F. N. Bjerken,

of Red Wing, were presented for membership and acted upon favorably. Dr. C. L. Olson, of Pine Island, was admitted to the Society by transfer card from South Dakota. The following officers were elected: President, Dr. H. T. McGuigan, Red Wing; vice-president, Dr. J. A. Gates, Kenyon; secretary-treasurer, Dr. C. A. Fjeldstad, Red Wing; delegate, Dr. M. W. Smith, Red Wing; alternate, Dr. M. H. Cremer, Red Wing.

The treasurer reported that there was a balance of \$49.82 on hand on January 4, 1916; received in dues from members, \$69.00. The expenses for the year were \$11.10, and \$51 was remitted to the state treasurer, leaving a balance of \$56.72 in the treasury, which amount was turned over to Dr. C. A. Fjeldstad, treasurer-elect for 1917.

The first paper on the program was "Pernicious Vomiting of Pregnancy, with Report of Cases," by Dr. W. J. Cochrane, of Lake City. Discussion of the paper was opened by Dr. A. W. Jones, of Red Wing. Dr. Alva Conley, of Cannon Falls, was unable to attend the meeting, and his paper on "Pituitrin" was read by the secretary, Dr. C. A. Fjeldstad of Red Wing led the discussion on this paper. "Mineral Springs Sanatorium and the Medical Profession of Goodhue County" was a very interesting paper given by Dr. Robinson Bosworth, of St. Paul, the discussion on which was opened by Dr. M. W. Smith, Red Wing.

H. T. MCGUIGAN, M. D.,
Secretary.

NEWS ITEMS

Dr. J. M. Ekrew has moved from Brainerd to Benson.

Dr. S. B. Stegeman has moved from Onida, S. D., to Gettysburg, S. D.

Dr. Christian Reimstad has refused to continue to do the health work of Brainerd for \$25 a month, and has resigned.

The lower house of the South Dakota legislature has passed a eugenics law, which requires a physical examination before a license to marry is granted.

The St. Louis County Medical Society has again failed in an effort to obtain a full-time health officer for Duluth. The cost of such work stands in the way.

The lower house of the North Dakota legislature has rejected, through a committee, Dr. Ladd's bill to regulate patent medicines. Where prohibition exists, there seems need of patent medicines.

A campaign to prevent the recurrence of infantile paralysis this coming summer has been opened by Dr. Ohage, the health commissioner of St. Paul. It is a campaign of sanitation. Why not make it general?

The Eitel Hospital Training-School for Nurses, of Minneapolis, graduated a class of seventeen on Washington's birthday. The exercises were held in the Unitarian Church, and the program was exceedingly pleasant.

A bill to create a state board of health for North Dakota met signal defeat in the lower house of the North Dakota legislature last month. The board was to be composed of men familiar with and trained in medical matters, and such men are not wanted.

Minneapolis has 2,400 registered cases of tuberculosis, and is asking for permission to issue bonds to the amount of \$350,000 for the enlargement of Hopewell Hospital and the erection of a new hospital. If such an amount will provide only 350 beds, the task of caring for 2,400 persons in need of institutional help is indeed a great task.

The "Radium Quarterly" is a new magazine devoted, as its name implies, to radium therapy. It is to be published four times a year at \$1 a year. The first issue is beautifully printed and fully illustrated. It is conducted by the Radium Institute of Chicago, and no doubt it may be looked to for very valuable and new things in radium therapy.

Dr. Flavel B. Tiffany, of Kansas City, Mo., is writing "A Journey Around the World, by an Oculist." Dr. Tiffany has visited the eye, ear, nose, and throat clinics of Europe more than a dozen times, and in his trip he saw the principal clinics of the East. His book will sell for \$2, and should be of great interest to eye, ear, nose, and throat men.

The Surgeon General of the Army announces that preliminary examinations for appointment of First Lieutenants in the Army Medical Corps will be held at convenient points the first Monday in each month. Full information concerning these examinations can be procured upon application to the Surgeon General, U. S. Army, Washington, D. C.

An attorney of Minot, N. D., reported to the Minnesota State Board of Health that a "combination bubbling fountain and cuspidor" (a happy characterization) in a railway station at Dodge Centre, Minn., is a "disease-breeder." Dr. Bracken replied that different Minnesota legislatures have refused to give the State Board control of such matters.

The Hennepin County Society passed a motion at its last meeting asking that the Ramsey and St. Louis County Societies join with the Hennepin County Society in requesting Dr. Bracken of the State Board of Health to suggest the best ordinance requiring treatment of the eyes of the new-born in Minnesota cities of the first-class,—Minneapolis, St. Paul, and Duluth.

Dr. J. Pollock, who has been practicing in Henley Falls since last fall, lost his life last month in a blizzard. He had made a country call, and felt it his duty to return to the village to attend patients there. He and the driver who took him into the country started back riding the horses. Dr. Pollock got separated from his companion, fell from his horse, and perished.

A semiweekly course of twenty-six lectures on military medicine and surgery began at the University of Minnesota on February 19. They are given at 8 A. M. on Mondays and at 5 P. M. on Wednesdays. Some lectures will be given by an army officer and some by members of the University staff. The subjects of the lectures can be had upon application to the University.

ASSOCIATE WANTED

I want a German or Scandinavian physician to become associated with me in my hospital located in the Twin Cities. Address 465, care of this office.

POSITION WANTED

A young lady who has had experience as bookkeeper desires a position as office assistant in a physician's office in the Twin Cities. Address 467, care of this office.

MINNEAPOLIS OFFICE FOR RENT

I wish to rent my office on the corner of Lake street and Nicollet avenue. Will sell office equipment and furniture very reasonably. Rent, \$20. Address Dr. H. W. Quist, 3006 Nicollet Ave., Minneapolis.

MINNEAPOLIS LOCATION OFFERED

I have a suite of two rooms suitable for a physician in a modern building, with heat, light, and janitor service, for \$18.00 per month. This building located on Fourth Street at Fourteenth Ave. S. E., Minneapolis, is only one block from the University, and is in the largest out-lying district in the city, with very little competition. A fine location for a young man. Address A. E. Simms, 331 14th Ave. S. E., Minneapolis.

STATIC MACHINE FOR SALE

One 24-plate static machine (Betz) in good condition. Cheap, if taken at once. Address D. Kalinoff, 308 E. Chestnut St., Stillwater.

A SALARIED POSITION WANTED

Or partnership with moderate investment in Twin Cities, by a physician experienced in anesthesia, radiography, and all lines of general work. Married; 35 years of age; clean habits; best of references. Address 466, care of this office.

POSITION DESIRED

A recent graduate with excellent general education and good surgical training would like to associate himself with some physician or surgeon. Am Norwegian and speak both Norwegian and German. No objection to leaving city. Would consider buying a practice. Address 460, care of this office.

PRACTICE FOR SALE CHEAP IF TAKEN AT ONCE

Good practice in a town near Twin Cities with all modern improvements, and good roads year around. Office well equipped; fine X-ray and high-frequency coil. Will sell for less than invoice. Real estate optional. Address 458, care of this office.

SANATORIUM FOR SALE

Built over a sulphur water spring. Beautiful grounds facing lake and boulevard, thirty-five minutes by street car to center of Minneapolis. Will sell on terms or lease to experienced person who will co-operate with ten doctors now interested. \$2,000 will handle the deal. Address 457, care of this office.

OFFICE WORK OR SECRETARYSHIP WANTED

Young lady with large experience in medical work wants position of responsibility. Has had several years' experience in reporting operations in the operating-room of a large hospital. Highest references given. Address 464, care of this office.

PRACTICE FOR SALE

On account of the death of a physician, a first-class practice is open for the right man; German and English-speaking people; 40 miles from Minneapolis; richest country in the state outside of cities; x-ray machine, instruments, drugs and complete office equipment for sale very cheap; immediate possession. Address 461, care of this office.

SANITARIUM FOR SALE

The Granger Sanitarium with greater possibilities has been used most for the Battle Creek system of sanitarium treatments. It is so adaptable that you can use it as you wish. It has about twenty-five rooms, and is located in a business block in the down town district of Aberdeen, S. D., a city of 15,000, without a similar institution in the 30,000 square miles of surrounding rich farming territory. \$1,000 will swing the deal. Particulars, description of lease, and a copy of the inventory upon request to John Granger, 135 Auditorium, Minneapolis, Minn. No use of our wasting correspondence, so state the nature of your proposed work, and I will give you my opinion of your probable success.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Ada	1,253	1,432	1															
Albert Lea	4,500	6,192	0															
Alexandria	2,681	3,001	2															
Anoka	3,769	3,972	5	1														
Austin	5,474	6,960	7															
Barnesville	1,326	1,353	2															
Bemidji	2,183	5,099	6					1										
Benson	1,525	1,677	0										1					
Blue Earth	2,900	2,319	2								1							
Brainerd	1,524	8,526	9		1													
Breckenridge	1,282	1,840	1													2		
Canby	1,100	1,528	4			1												1
Cannon Falls	1,239	1,385	1	1														
Chaska	2,165	2,050	0															
Chatfield	1,426	1,226	3													1		
Cloquet	3,074	7,031	2															
Crookston	5,359	7,559	5													1		1
Dawson	962	1,318	1															
Detroit	2,060	2,807	4															
Duluth	52,968	78,466	75	10	0	9	2	0	0	0	0	0	0	1	3	8	0	11
East Grand Forks	2,077	2,533	4			1										1		
Ely	3,572	3,572	1											1			1	
Eveleth	2,752	7,036	1														1	
Fairmont	3,440	2,958	5			1												
Faribault	7,868	9,001	2	1												1		
Fergus Falls	6,072	6,887	21	4	1	1	1									4		
Glencoe	1,788	1,788	1															
Glenwood	1,116	2,161	3															
Granite Falls	1,454	1,454	0															
Hastings	3,811	3,983	6															5
Hutchinson	2,495	2,368	2													1		
International Falls		1,487	2													1		
Jordan	1,270	1,151	1															
Lake City	3,142	3,142	5	1	1											1		
Le Sueur	1,937	1,755	2												1			
Little Falls	5,774	6,078	5												1	1		
Luverne	2,223	2,540	5															
Madison	1,336	1,811	2			1												
Mankato	10,559	10,365	12			2											3	1
Marshall	2,088	2,152	1															
Melrose	2,591	2,591	2	1														
Minneapolis	202,718	301,408	310	29	8	21	2	1	0	0	0	1	0	2	3	34	0	34
Montevideo	2,146	3,056	1															
Montgomery	979	1,267	2															
Moorhead	3,730	4,840	6													1		
Morris	1,934	1,685	0															
New Prague	1,228	1,554	1															
New Ulm	5,403	5,648	4			1												1
Northfield	3,210	3,215	5			1												
Ortonville	1,247	1,774	1			1												1
Owatonna	5,561	5,658	8					1										1
Pipestone	2,536	2,475	2															
Red Lake Falls	1,666	1,666	1															
Red Wing	7,525	9,048	5			1												1
Redwood Falls	1,661	1,666	2	1														1
Renville	1,075	1,182	0															
Rochester	6,843	7,844	43	1	1	1										7		
Rushford	1,100	1,011	2															
St. Charles	1,304	1,159	1															
St. Cloud	8,663	10,600	20															3
St. James	2,102	2,102	2															
St. Paul	163,632	214,744	198	18	2	12	1	0	0	0	0	0	0	1	2	13	0	15
St. Peter	4,302	4,176	3															
Sauk Centre	2,154	2,154	4											1				1
Shakopee	2,046	2,302	1															
Sleepy Eye	2,046	2,247	2															
South St. Paul	2,322	4,510	4			1										1		
Staples	1,504	2,558	4			1												
Stillwater	12,318	10,198	5			1												1
Thief River Falls	1,819	3,174	3			1												
Tower	1,111	1,111	1															
Tracy	1,911	1,826	1															
Two Harbors	3,278	4,990	1			1												
Virginia	2,962	10,473	10	1		3										1		2
Wabasha	2,622	2,622	4			2							1			1		
Warren	1,276	1,613	2															
Waseca	3,103	3,054	4												1			1
Waterville	1,260	1,273	2															
West St. Paul	1,830	2,660	5															
Willmar	3,409	4,135	5	1														
Winona	19,714	18,583	19	2		1										2		
Winthrop	813	1,043	0															
Worthington	2,386	2,386	5													1		

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,222	1												1			
Aitkin	1,719	1,633	0															
Akeley			1		1													
Appleton	1,184	1,221	1															
Belle Plaine	1,121	1,204	2															
Biwabik		1,690	2		1													
Bovey		1,377	*															
Browns Valley	721	1,058	1															
Buffalo	1,040	1,227	0															
Caledonia	1,175	1,372	1															
Cass Lake	546	2,011	1															
Chisholm		7,684	3		1													
Coleraine		1,613	0															
Delano	967	1,031	2														1	
Farmington	733	1,024	1														1	
Fosston	864	1,055	0															
Frazee	1,000	1,645	2															
Grand Rapids	1,428	2,239	2	1														
Hibbing	2,481	8,832	8															2
Jackson	1,756	1,907	1															
Janesville	1,254	1,173	1															
Kenyon	1,202	1,237	0															
Lake Crystal	1,215	1,038	0															
Litchfield	2,280	2,333	4														1	
Long Prairie	1,385	1,250	0															
Madelia	1,272	1,273	1															1
Malenia	1,204	1,102	*															
Mountain Lake	959	1,081	2															
Nashwauk		2,080	2															
North Mankato	939	1,279	2															
North St. Paul	1,110	1,404	0															
Osakis	917	1,013	1					1										
Park Rapids	1,313	1,850	0															
Pelican Rapids	1,033	1,019	1															
Perham	1,182	1,376	5														1	1
Pine City	993	1,258	1															
Plainview	1,038	1,175	0															
Preston	1,278	1,193	2															
Princeton	1,319	1,555	1			1												
St. Louis Park	1,325	1,743	3	1														1
Sandstone	1,189	1,818	1			1												
Sauk Rapids	1,391	1,745	2	1														1
South Stillwater	1,422	1,343	2															1
Springfield	1,511	1,482	2															
Spring Valley	1,770	1,817	0															
Wadena	1,520	1,820	3															1
Wells	2,017	1,755	1															
West Minneapolis	2,250	3,022	2			1												
Wheaton	1,132	1,300	0															
White Bear Lake	1,288	1,505	1															
Windom	1,944	1,749	3			2												
Winnebago City	1,816	2,555	1															
Zumbrota	1,119	1,138	1															
STATE INSTITUTIONS																		
Anoka, Asylum			3	1														
Faribault, School for Blind			0															
Faribault, School for Deaf			0															
Faribault, School for Feeble Minded			2		1													
Fergus Falls, Hospital for Insane			0															
Hastings, Asylum			1															
Minneapolis, Soldiers' Home			7			1												
Owatonna, School for Dependents			0															
Red Wing, State Training School			0															
Rochester, Hospital for Insane			10	2														
Sauk Centre, Home School for Girls			0															
St. Peter, Hospital for Insane			9	4														
St. Cloud, State Reformatory			0															
Stillwater, State Prison			1															
OTHER PARTS OF STATE			704	66	10	51	9	3	2	0	8	4	1	3	18	54	2	70
Total for state			1749	148	27	121	15	7	2	0	9	5	3	14	30	145	3	160

*No report received. REGISTRAR not doing his duty.
158 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

THE LINCOLN RUBBER CO.

The high cost of rubber has put a temptation before the manufacturers of rubber goods that is evidenced in a decided deterioration in the output of some firms. The slightest deterioration, in fact the slightest departure from perfection, in rubber gloves for use by a medical man, is intolerable. We believe that at least the Lincoln Rubber Company, of Akron, Ohio, has studiously maintained in its gloves the highest attainable standard of quality of material, design, and workmanship. These gloves seem to be thought of as the only standard gloves made.

The company is to be commended for the high quality of its product. Messrs. Noyes Bros. & Cutler are the Northwest agents of the Lincoln Company.

CATARRHAL CONDITIONS

There is no denying the fact that catarrhal conditions of the mucous membranes are prevalent in this climate, and that they are slow of cure without great care. These conditions are much alleviated, and often cured, by the free and long-continued use of a mild antiseptic with recognized stimulating and healing action.

The medical profession has long recognized zinc chloride as the best antiseptic for all mucous membranes. Lavis is such an antiseptic in a *stable* form, which is indispensable in the application of zinc chloride.

Lavis is not a patent medicine, but it is simply a well-known therapeutic agent put up in stable form with one or two other bland ingredients to make it more pleasant in application to inflamed surfaces.

A NEW HEADLIGHT AND BAND

Messrs. Sharp & Smith have put upon the market Dr. Beck's new headlight, which, as the illustration on another page clearly shows, has several advantages over the old forms of headlights.

Improvements of this kind are especially welcome, as they mean more comfort for both the physician and the patient, and largely increase the efficiency of an instrument much used in diagnosis.

Such improvements are of the utmost value when they enable the examiner to see just a little more clearly and somewhat deeper into a cavity wherein may lurk the evidence of disease.

The high standing of Dr. Beck and of the firm is ample guarantee that no exaggerated claims are made for this new instrument.

THE RIVER PINES SANATORIUM

It is stoutly maintained by many of our best physicians that a change of climate, especially a change from the Northwest to a low altitude, is not wise in the case of many patients with beginning tuberculosis, and is unsafe in advanced cases. Surely, a change from a comfortable home in the Northwest to camp-life in the South or California is not wise. The only improvement on a home with the comforts that even moderate means bring one, is a sanatorium. Now, why should our Northwestern physicians not recommend to their

patients, especially patients who have become accustomed to our invigorating climate, that they try a high-grade sanatorium prepared for the conditions here to be met in a winter like this?

Such an institution is the River Pines Sanatorium at Stevens Point, Wisconsin, under the direct management of Dr. J. W. Coon.

Its location in the pine woods is ideal, its buildings meet all the conditions that experience has shown to be helpful, and its management is unexcelled.

CORPUS LUTEUM

True corpus luteum preparations only should be employed in cases calling for corpus luteum. Suitable cases for this preparation should be carefully selected. Indications for its administration distinct, and its use should be limited to these conditions. The administration of Corpus Luteum (Armour) is followed by definite phenomena.

It is of the utmost importance to use a preparation obtained from the ovaries of pregnant animals. Two-to-five grain doses should be administered.

There is great necessity for constant supervision of the blood-pressure of patients taking corpus luteum. It should not be permitted to fall more than 15 mm. below the patient's normal pressure and never below 90 mm. The Armour preparation is made from true substance and may be depended upon to produce results.

CHIPPEWA WATER

When physicians prescribe, as they often do, the drinking of large quantities of water, they make a great mistake if they do not specify that the water must be of the right kind. Surely, water of a high mineral content or water that is subject to even slight contamination, is not the water to be taken for eliminative purposes. The only suitable water is a fairly soft natural spring water, such as filters through sandstone and is wholly free from contamination, even such as is sometimes found far from cities and villages.

Such a water is put on the market, as a table water and not as a mineral water, by the Chippewa Springs Corporation, of Minneapolis. This water is shipped in porcelain-lined tanks from a sandstone spring in Wisconsin, and no purer natural water is obtainable anywhere.

MOOR (MUD) BATHS

The Grand View Health Resort of Waukesha, Wis., began the use of the Moor (Mud) Baths a number of years ago, and the results obtained in the treatment of a well-defined group of diseases have been very gratifying. This group of diseases includes all conditions in which good circulation, elimination, and rest promise a cure. It is useless to name the specific diseases that especially respond to such treatment, for nothing is gained by calling a condition by some name, especially when such name indicates only a single manifestation of the condition.

The worn-out business man, whether old or young, whether with or without "rheumatism," needs baths, massage, relaxation, rest, etc. These he can gain at the Grand View Health Resort; and in even a short course of such treatment he will either get cured or learn what he must further do to save his health and perhaps his life.

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The advantages of this Headlight are the following:

1. It is extremely light in weight, the reflector being made of highly polished aluminum. The shape of the reflector is such as to give a clear field and having an opening so as to enable the examiner to focus clearly in depths of cavities.
2. The globe is one of the Mazda type with a spring slip-joint and socket so as not to become loose and break the current.
3. Owing to the lack of heat generated by the globe and the parabolic shape of the reflector, this Headlight does not get hot and thus avoids burning anyone it comes in contact with.
4. The head band is constructed of the combination of an overhead as well as a circular band, giving more security on the head. It is adjustable to any size and shaped head.

Dr. Beck's Headlight and Band Complete, price \$10.00

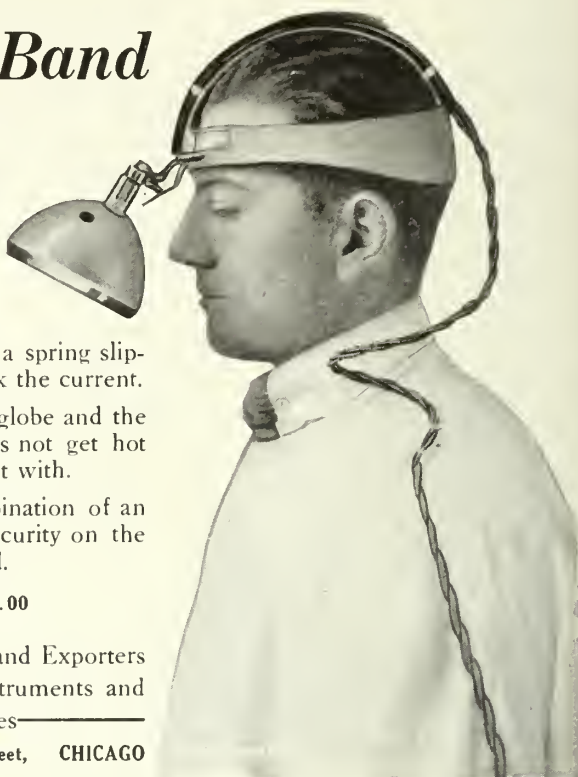
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The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, MARCH 15, 1917

No. 6

THE RELATION OF MEDICAL MEN TO PRESENT-DAY SOCIAL CHANGES*

BY J. G. CROSS, M. D.

MINNEAPOLIS

These are times of change. It is not only in the medical profession, but in all social lines that progress is being made. For most of the year the attention of this Society has been fixed upon matters of scientific interest, as our programs for the year will show. We should not lose sight of changes which affect us as members of society and which may, perhaps, affect us especially as physicians. The medical profession has need to clear itself from the suspicion which seems to obtain with the public that we are either forsaking the good traditions of the profession for more spectacular things, or that we as a body are adhering to a code of ethics out of date in these times. We physicians know that the code of ethics will last and be the only safe rule of professional conduct as long as physicians desire to treat their patients and each other as they would themselves be treated. As regards the attitude of the public toward the medical profession: Is it strange that we should be only partially understood? It has been long considered a defect that we have no system of publicity which gives the public true and authoritative statements of medical progress and the attitude of scientific men. Instead of such rational presentation of fact, the public is confronted with dramatic reports from this or that hospital and with garbled and embellished accounts of so-called discoveries. The impressions thus made on the lay mind are only partially offset by con-

tact with doctors of their acquaintance, and meanwhile, in most instances, the modest medical man says nothing and does nothing to set the public right. We as medical men understand each other much better than we did formerly. It is to be hoped that the traditional reticence which has prevented the public from knowing as much of the true progress of medicine as it should will be overcome and give place to authoritative, dignified, and respect-compelling publicity.

There are certain changes within the profession which deserve notice, if not discussion.

Specialism has come to stay, and it would seem that the subdivision of specialties which went to such an extreme some time ago, has now swung back and reached its proper level. The public has become used and resigned to specialism, which it at first resented, or affected to resent. No man in these days believes it possible that one person can become proficient in all lines of diagnosis and practice. There is, however, room for argument over the great inequality of medical, surgical, and obstetrical fees. There must come in time an adjustment of the financial return a patient will make for professional services which will be based upon the real responsibility and skill required.

The general tendency of the times in all things to centralize, combine, and group together, has had its influence in some quarters on medical practice. Together with this, the subdivision of medical work has resulted in a tendency for physicians to group themselves. One of our most eminent medical writers, Richard Cabot, wrote

*The Annual Address of the President, delivered before the Hennepin County Medical Society, January 8, 1917.

in the *American* for May, 1916, an article on "Better Doctoring for Less Money," and his article has called forth a great deal of criticism from members of the profession. He frankly advocates the grouping of doctors together on the ground that only in this way can the patient obtain the skilled service which one man alone cannot give, especially in the chronic disorders. Unfortunately, not all combinations of medical men into groups are made with the idea of rendering more efficient service to the public.

Better means of transportation and communication are having their influence on medical practice, and make it easy for the patient who can travel to go for professional advice where "distance lends enchantment." The telephone and automobile have at the same time enabled the country physician to minister to people three and four times as far away from his office as before the day of the motor and better roads.

We have nearly the greatest example in the history of medicine of the organization of private practice. Beginning as a surgical practice alone, this clinic has been developed into a large group, covering the entire field of medicine, with surgery the greatest feature, and this by reason of extraordinary executive ability and singleness of purpose. The combination of professional skill with this rare executive capacity will not often be encountered. Professional ability alone could never rear such a system, and it is perfectly obvious that without such veritable genius as builds large business enterprises, this conspicuous instance of organization could never have come about. We admire the acumen, the ability to attract and control associates, to overcome material and human obstacles, no less than we admire the professional attainments for which these furnish the background. Many men have attempted to imitate the example of the Mayos, but it has never been successfully done. Most private combinations of physicians start with enthusiasm, flourish for a time, and either disband or fall into a state of "innocuous desuetude." One must make a sharp distinction, however, between such groups of practitioners as are found in hospitals and dispensaries or other associations where there is no business combination effected, and those groups which have a common or partnership basis. It is the latter group which has rarely seemed to succeed or to fulfill the need for greater efficiency. Advantage is often taken of the tendency of the lay mind to think that the collective work of several

physicians may be of more value than that of one man, even though his particular interest and feeling of responsibility may be greater than that which is divided among several. The spirit of co-operation and mutual helpfulness between physicians is so notably good that no patient need lack for anything which his case requires in the way of diagnosis or skilled advice. The old attitude of secretiveness on the part of a physician, of a proprietary right in his patient, or the assumption of mysterious power which he himself possessed, no longer obtains. There is not a physician in this room who would not consider it a privilege to give his advice, based upon his peculiar experience, to another practitioner. This spirit of co-operation, mutual faith and helpfulness has grown enormously in the last few years, if you will stop to consider it, in the profession of Minneapolis.

Any one of the matters which have been touched upon is worthy of most serious consideration; but I must limit my discussion, as I intend to take up, from the point of view of the physician himself, the position in which the profession, and especially the profession of Minneapolis and vicinity, finds itself at the present time, and, further, to consider changes which are sure to come in medical practice, and their probable effects on ourselves. It does no good to hold fast to old things simply because they are old. It behooves us not to be reactionary and wish for an older order of things, but to continue to advance and to protect ourselves against tendencies which might weaken us as a profession.

The questionnaire which was sent to members of the Society, proved to be of considerable interest. Its results analyzed may be summed up in a few statements. In asking for answers to these questions, it was intended to find out how well we doctors are doing, taking into consideration the amount of time and money spent in preparation for our work, the income we receive and the amount of protection which we have for ourselves and our families against age and disability.

The questionnaire was sent to 375 physicians, and nearly 200 replies were received. Of the 200 physicians who made replies 48 per cent have a gross income of \$5,000 a year or less; 79 per cent have a gross income of \$10,000 or less; 31 per cent have an income over \$5,000; and 13.5 per cent have an income of \$10,000 to \$15,000; 7.5 per cent have an income of over

\$15,000. The income is, of course, from professional work alone. The average age at beginning practice was 26; and the average number of years spent in preparation was $7\frac{1}{2}$ years, including the time spent in college, in medical school, and in postgraduate study. If we estimate the expense per year at \$500, the probable earning capacity per year during this period in other lines of endeavor at \$1,500, it is obvious that, without considering the loss of interest on the investment of money which was spent on education, the average doctor in Minneapolis has spent \$15,000 in preparation for his work, which he begins at the age of 26. It is hardly necessary to comment on these figures further than to say that economically the doctor is handicapped at the outset in comparison with the man who follows a business career. It is not fair to compare a professional man with his fellow in business. It is assumed that professional life does not lead to the accumulation of a fortune, nor does it often lead to such an accumulation of wealth as to allow the luxuries to any great extent. It is true, however, that most members of the medical profession do not safeguard their earnings and save when it is possible to do so.

Of those who answered the questions, 35 acknowledged that they have no property. Of our members, 60 per cent have no income except from their professional fees; the other 40 per cent have some income from savings. All but 16 of our members have life insurance, varying in amount from \$1,000 up; 30 have \$1,000 to \$5,000 insurance; 54 from \$5,000 to \$10,000; 34 from \$10,000 to \$15,000; 22 from \$15,000 to \$20,000; 11 from \$20,000 to \$25,000; 10 from \$25,000 to \$30,000; 4 from \$30,000 to \$35,000; and 10 have over \$35,000.

The last two questions were intended to bring out whether we as physicians are increasing our fees in proportion to the increased cost of living. In reply to these, it is found that only 26 had increased their fees in proportion to the increase in the cost of commodities, which probably represents about 35 per cent increase in the last eight years. Of our members 149 said they had not increased their fees. The remainder of the answers received were various, some of them very interesting; but time does not permit of commenting further than to say that more than half of us are receiving no more in return for our services than we did when the cost of living was materially less.

The Council on Health and Public Instruction

of the American Medical Association is now engaged in collecting information on the status and earnings of the medical profession of this country, along about the same lines as the above; and the result of their investigation will be awaited with great interest. At the present time, as stated in their last report, "the wildest statements are current without any basis of fact underlying them." With somewhat over 50 per cent of our members reporting, and assuming that to be an average of the entire membership, it is a fair statement to say that the medical profession of Minneapolis is as prosperous, financially speaking, as they are progressive in other respects.

We have in Minneapolis no very urgent problems which are peculiar to our situation. There are, to be sure, questions of medical education in which we are all intensely interested, which are not entirely settled. In medical education we have entered upon a period of the greatest progress. Full-time clinical teachers are on trial, and the question cannot be as yet considered a settled one. The question of educating men for specialties in medical schools which are organized primarily for undergraduate courses of study, is also one on which we cannot say we have heard the last word. There are experienced teachers of medicine who seem to think that such a combination of teaching is unwise. In this connection we have the example in our own medical school of the affiliation with the Mayo Foundation, frankly an institution for the training of specialists, now undergoing a trial period.

Research work is a fetish at present, and every medical faculty considers it a reproach if a report of the result of research work is not forthcoming from its members at regular intervals. The words of Councilman in this respect are worth meditating upon. He draws a sharp distinction between medical teaching, research, and practice. As he aptly remarks, the investigative ability necessary to do research work is often quite independent of its surroundings. It may flourish in out-of-the-way places, as well as under the most favorable conditions. He seems also to question whether results worthy of the effort can be attained simply by saying, we shall here and now produce something original. He draws a comparison between it and the production of poetry. As he says, no one would expect by founding an institution for the production of a national school of poetry to make a better lot of poetry than had existed before.

Neither have the best productions in art always been the output of art schools. It has recently been said by one of our writers that there is such a vast amount of experimental work appearing and clamoring for recognition that it is absolutely impossible for any one person to keep track of that which pertains to his own particular line of practice alone. After attending a large gathering of medical men and listening to the papers presented for discussion, one almost wishes there could be a universal solvent, an intellectual aqua regia, which would dissolve them all and leave a clear solution. However, we know that it is only through the precipitation and sifting of this vast amount of product that the golden grains of truth are obtained which mark medical progress.

If we turn to the social and economic side of our work, it must be acknowledged that there is great inequality in medical services rendered the public. There are two classes of people who can easily obtain the fullest consideration and care. Strangely enough, these two classes are the people of large means, and those who cannot pay anything for medical services. For those who can employ professional help without regard to its cost, there is no reason why the best of diagnostic ability and judgment in the handling of illness or disease should not be obtained. The poor, or those who through temporary want are unable to pay for medical service or hospital care, are amply provided for and have the benefit of the combined skill of hospital and dispensary staff, if they will accept it. For the great middle class, as Richard Cabot has so clearly stated, the situation is different. The self-respecting wage-earner finds himself unable in the event of long illness and enforced idleness to command the same facilities in the care of himself or a member of his family which even a man without means can so freely obtain. Free nursing is to be had for the asking by the dependent person or is even thrust upon him. The independent family, however, often cannot afford the expense of a nurse, or cannot furnish the necessary room in the home, or pay the cost of hospital care.

How can the medical profession increase its efficiency to this part of the public? Is the State to step in. Preventive medicine and the control of contagious diseases are already largely in the hands of public authorities.

We are approaching, however, the discussion of a question which is bound to occupy our attention in the near future. It is being said that

Health Insurance is bound to come in one form or another, as it has in Germany, England, and other old countries. The attitude of the medical profession in giving proper form to legislation as regard health and industrial insurance will have much to do with its effect on medical practice.

At the June meeting in Detroit last year, the Council on Health and Public Instruction made a long report through its chairman, Alexander Lambert, which showed the seriousness of the problems presented by health insurance. Early in November a conference in Washington on Health Insurance was attended by representatives from different parts of the country to consider proposed legislation looking to its establishment and regulation. There is an American Association for Labor Legislation, which has taken up the question of health insurance and issued a brief on the subject, with a select bibliography. It would be well worth while for every physician to read these articles and be informed on the subject which will sooner or later require his attention. I cannot do better in presenting this subject than to quote freely from the report of the Committee on Social Insurance, a special committee of the Council on Health and Public Instruction of the American Medical Association.

The object of health insurance, whether private or compulsory by law, is to "obtain in the case of illness for every person affected adequate medical service to which he is entitled by reason of a certain provision made during health against such a contingency." It should insure care and attendance without pauperizing the patient or his family; and, furthermore, insure that every individual may have such care that he is, if possible, returned to a state of economic efficiency in the shortest time. The legislation which has been adopted in thirty-four of the United States enforcing Workmen's Compensation Law is a long step toward that which will undoubtedly come compelling health insurance. Health Insurance, in its broad sense, may be either voluntary, as in the case of the lodge member or the man who takes out a policy with an insurance company against disability, or it may be, as in the case of contract or corporation employes insurance, a thing which depends upon the employment at a particular factory, mine, or for a certain company. It is seen at once that under these circumstances the protection that is offered insures only the thrifty and well-paid industrial worker, and possibly his family. This follows

the plan of voluntary sickness insurance as seen in France, Denmark, Sweden, and Switzerland. Under such a plan those who are least able to stand a period of inactivity and illness have the least protection because they have not been thrifty enough, or do not earn enough wages, to enable them to take out the insurance:

The more prosperous workers are the ones that have formed the voluntary insurance societies of Germany, England, and the United States. Those earning only a living wage, and who are often out of work, are the ones to whom sickness comes without any preparation and who have no protection, but immediately become dependent for care and medical services. It is only through compulsory insurance that this group can be protected. In Denmark and Sweden voluntary insurance, although subsidized by the government, after thirty years' experience, has been found to protect only 20 per cent of the population in Denmark and only 10 per cent in Sweden, even though in Denmark this insurance protects also those dependent upon the wage-earner as well as himself.

To quote from the report further:

Compulsory sickness insurance in Great Britain in the last four years has brought out the fact that previous to universal insurance huge masses of the poor never had had any medical care. There had been a vicious circle of poverty, disease, and unemployment, which had constantly reacted one on the other. With the poor all that separates their poverty from absolute destitution and want is the ability to go to work each day. If sickness deprives the poor man of this ability to work, he faces destitution, which means that, unless he soon recovers his health, he must turn to public charity to help him in the care of his family.

It will be useful to glance at the provisions and work of compulsory insurance in Germany and Austria-Hungary and in England, as representing in general what may be expected from such systems:

In Germany the first law was passed in 1883. The aim sought was mutual insurance with self-administration, and as there were already existing mutual insurance societies for the purpose, either local or existing in the same trade, the law recognized different classes of societies and simply required that they should make annual reports and conform to provisions of the law with reference to minimum benefits and methods of investing funds. In 1911 the law was modified by extending some of its provision to other classes of society. The contributions to voluntary societies are limited by law in different classes at from one to two per cent of the daily wages of day-laborers, and in other classes not to exceed 4 per cent of the same. The workmen pay two-thirds and the employers one-third. In practice, employers pay all and deduct the proper amount from wages, thus avoiding necessity for collectors, contributions both of employers and employes being turned over to the societies at convenient intervals. The employer must enforce on his men the duty of insuring. The workingman may or may not insure, as he pleases, but whoever employs an uninsured

workingman renders himself liable both to a fine and to the payment of all costs in case of sickness or accident. In Austria-Hungary the system is very much the same. In fact, is modeled after the German plan.

The report of the committee says further:

The most complete and most recent scheme of social insurance is the National Insurance Act of Great Britain of 1911. The title of this law shows that it is to provide for insurance against loss of health, and for the prevention and cure of sickness, and for insurance against unemployment and for purposes incidental thereto. Under its provisions, health insurance is *compulsory* on all employed persons aged 16 to 70, except those in the naval or military services, or for whom adequate provision already exists. There are comparatively few exceptions to these classes, and the Insurance Commissioners have the right of transferring them to the compulsory insurance scheme. These persons excepted may also voluntarily insure if they are engaged in some regular occupation and are wholly or mainly dependent for their livelihood on their earnings in such occupation. No person may become a voluntary contributor who has an annual income of \$778.64, that is, 160 pounds, unless he has previously been insured for a period of five years or upward. There is no discrimination in respect of sex or citizenship, but all must be residents of the United Kingdom. The standard rates of insurance are 14 cents per week for men and 12 cents for women. This amount is made up from contributions from employer and employee and public funds, the amount paid by each depending on the insured person's rate of wages. If this reaches or exceeds 60.8 cents per working day, the employer pays 6.1 cents and the male employee 8.1 cents and the female 6.1 cents per week, nothing being contributed from the public funds. If the rate of wages falls between 49 and 61 cents a day, the employer pays for male employees 8 and for female employees 6 cents a week, and the employee regardless of sex, pays 6 cents. As the scale of wages decreases the employer pays a larger proportion and the employee a smaller until at the lowest scale the employee pays nothing, the employer and the state paying all. A central administrative body, known as the Insurance Commissioners, was created with the power to appoint officers, inspectors, referees, etc., subject to the approval of the Treasurer. There were also created Insurance Committees for every county and county borough. These committees have authority to still further subdivide their district, and are required to make reports as to the health of the insured persons and conditions affecting same, and also to disseminate information on matters relative to health, co-operating, if thought best, with local educational and other institutions. Cause of excessive sickness may be inquired into at the instance of Insurance Commissioners, and where such excess is due to neglect or unsanitary conditions, the cost and extra expense may be demanded from the persons chargeable with such neglect.

There is a second part of compulsory insurance which provides for benefit in the cases of unemployment in certain trades. The Board of Trade administers this portion of the Act and the list of trades may be extended by this Board.

Applicants for benefit under this branch of the Act must show that they have been employed in an insured trade in each of not less than six separate calendar weeks in the preceding five years; that they are capable of working, but unable to obtain suitable employment; and have not exhausted their right to benefits under this part of the Act. Workmen are not required to accept employment in place of striking workmen or a lower rate of pay than is customary in their line of employment in their district. Where, however, the employment is lost by reason of the stoppage of work due to a trade dispute in the establishment in which the workman is employed, he can receive no benefits so long as such stoppage of work continues, unless he has during such stoppage become actively employed elsewhere in an insured trade. Workmen losing employment through misconduct or voluntarily leaving employment without just cause may receive no benefits for a period of six weeks.

The results of surveys made in Germany and the United States correspond well, and indicate that of all wage-earners, men and women, the average loss of time through sickness amounts to about nine days in every year. Compensation for accidents has attracted much attention from the lawmaker, but accidents cause only one-seventh as much destitution as sickness. The death-rate among wage-earners has been shown by the Prudential and the Metropolitan Life Insurance Companies to be higher than that among other classes. Aside from occupational diseases, there is a higher death-rate in the working population from tuberculosis and the degenerative diseases of middle life. A social survey made in the City of Rochester, New York, may be used as fairly typical of conditions that exist in other cities of the United States. It was found there that 39 per cent of the cases of sickness did not have any physician in attendance. Of 661 persons unable to work because of sickness, only 63.8 per cent had medical attention; while of 137 who were ill but able to work, only 45.3 per cent were under a doctor's supervision. Why are these people not cared for and presumably returned to health and working condition at an earlier date because of proper care? Assuming the condition as shown in Rochester, and a similar condition shown to obtain in a survey made in Dutchess County, New York, including one good-sized city and several villages and towns, to be fairly typical of the condition existing throughout the United States, what is the reason

that so large a proportion of people go without proper care? Figures are not at hand to show whether a considerable number were influenced by prejudice against medical practice, but probably these were very few.

This brings up the question of what existing agencies there are for the care of those who are not often able to bear the unusual expense of illness and idleness combined. It is stated in the report made at the Detroit meeting of the American Medical Association that "the general situation in the United States today is similar to that in England and Germany before the passage of their comprehensive health insurance laws. No state, municipal, or other government in any way provides for or aids health insurance. Medical benefit, however, is generally granted by both state and municipal authorities in the public hospitals which are supported so generally throughout the Union. There are, of course, the free dispensaries, and states and municipalities provide, through various departments of health, for a certain amount of sanitation, preventive medicine, and the control of preventable diseases under special powers.

We have, in addition to these agencies, other evidences of health insurance, as shown in benefits given by the trade-unions, the employers' organizations for the benefit of employes, the fraternal insurance orders and lodges, and the commercial companies operating for profit, or on a mutual principle, that is, industrial insurance companies and casualty companies doing industrial insurance. The trade-unions probably take in about 10 per cent of the total number of wage-earners. They are the only organizations which, so far, have successfully dealt with unemployment insurance. The extent and operation of health insurance by trade-unions, employers' organizations, fraternal companies, and commercial insurance companies, are very fully discussed in the Association's Committee Report, which shows most clearly that all of these agencies combined, together with the voluntary charitable organizations, do not and cannot cope successfully with the situation. Free hospital wards and dispensaries are not sufficient, and are objected to by many wage-workers as charity. The number of dispensaries is stated to have increased seven-fold in the past fifteen years. Large numbers of wage-earners and their families who need hospital treatment do not apply because they feel that they are not in the class who should be objects of charity. Thousands lose health

and, consequently, efficiency, and they even become dependent for lack of proper treatment during illness. This feeling of independence should be respected, and is in line with the best principles of social service to avoid pauperizing its cases. The existing charitable agencies cannot provide an adequate solution. Indeed, for the great wage-earning class provision should be made which is not charitable.

Commercial health insurance can never be developed to meet the needs of the situation. One reason is the high cost, which must cover the expense of soliciting and collecting, as well as making the profit for the insurance carrier, thus making it cost approximately one dollar for every forty cents which the insured receive in benefits. Then again, the company must so word its policies that they do not cover enough causes of illness. The fact that a commercial company, whether mutual or not, has a scattered membership, makes inspection and supervision expensive or inefficient. Fraternal insurance companies reach only the business, professional, or highly paid wage-earning class. Without State supervision of administration, at present, fraternal insurance exhibits all the dangers of lodge or contract practice. The continued readjustment of premiums of fraternal companies bears witness to the inadequacy of this system. It may be said that no voluntary system of insurance against illness includes enough of the wage-earners, but includes only those who are thrifty enough or earn enough above the living wage so that they can afford to pay the premium alone. Employers' and mutual societies administered wisely by democratic methods come nearer to solving the problems of their members than do the agencies named above. However, it is evidently the opinion of those who have given exhaustive study and thought to the question that the desired results of more adequate treatment, financial protection during illness, and the prevention of disease, which existing agencies are unable to secure, can appropriately be reached through a comprehensive system of compulsory health insurance, providing medical care and cash benefits and maintained under democratic management by joint contributions from employers, employees, and the State. This method makes certain the insurance of all wage-earners who may reasonably be expected to require protection.

Compulsory health insurance would make large reserve funds unnecessary and thus save in

cost. It would give opportunity for simplified and economical administration; and such a method would preserve independence and supply as a legal right all the needs of the wage-earner during illness. The proposed plan will probably also include maternity benefits to the wives of the wage-earner, as well as to insured women. Funeral benefits may also be included. Bills were introduced into the legislatures of Massachusetts, New York, and New Jersey in 1916 providing just such protection, and the insurance is made compulsory. The cost of these benefits and their administration, amounting to about 3 per cent of the wages, is to be borne two-fifths by the employee, two-fifths by the employer, and one-fifth by the State. It is claimed that it is just to divide the cost in this way. Enlightened employers of labor recognize the economy in better industrial conditions, but not all. If they are all compelled to share in the cost of workmen's compensation health insurance, conditions of work will tend to be bettered. Sickness of the worker should be a legitimate cost of production. Of course, this ultimately falls on the consumer, just as does the share of the State upon the taxpayer. If, however, the results are at all in keeping with those already known, the return to the taxpayer and the public will be many times what it costs. It may be said that in adopting such a system, we are approaching socialism, but would this be any more socialistic than the present State care of the defective and the insane, or the State control of preventable disease?

It is argued, with good reason, that health insurance will stimulate preventive measures against illness. The report of the Judicial Council says that "this movement toward social insurance is the beginning of a new social economic condition in this country." The measures proposed will of necessity influence the medical profession profoundly, but, as the report again says, "the medical profession will accept its responsibility in these new social conditions, as it always has accepted its responsibilities in the past."

The problems presented above are complicated. It will depend, largely or entirely, upon medical men how the organization of a system of administration of compulsory health insurance can guarantee good medical service. The problem of paying physicians is no inconsiderable part in providing efficient service. It goes without saying that they should be fairly paid.

It is also evident that much of the unpaid service of today would be paid for under a Workmen's Compensation Law. The great question will be as to what is adequate remuneration under such a system. Every physician ought to familiarize himself with the plans proposed, and consider their probable effect in practice. If the medical profession does not take an active part in the settlement of the problems connected with the proposed legislation, they will be settled for it. It is to be hoped, and it is entirely possible, that the evils which have attached heretofore to contract practice may be avoided and the medical profession, as well as the public, benefited.

The doctor is necessary to the carrying out of any health insurance laws, and such laws must be so formulated that justice will be done in their operation to the doctor as well as the patient.

Since such laws have been enacted in Europe the physicians have had to fight for their rights. In Germany they have won nine-tenths of their contentions, and the majority of the contested points in England. The wise oversight of such legislation on the part of the medical profession of our country may forestall the need for such disputes. It is the medical profession alone which is capable of dealing with questions which relate to sickness and resulting disability. Every physician is of necessity brought closely in touch with social problems. Some one has said that "every case of sickness is a social symptom, and means that there is something wrong in the community." It behooves us whose every-day work makes us familiar as no other class with all social conditions to take an active part in these questions which affect the public no less than ourselves.

STANDARDIZATION OF DIGITALIS AND POTENCY OF THE MINNESOTA LEAF*

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MINNEAPOLIS

The following research was undertaken with a view to procuring an effective digitalis for hospital use. We feel that it establishes the potency of the digitalis leaf grown at the University of Minnesota by the Department of Pharmacy.

Rowntree and Macht,¹ in searching for a potent and reliable specimen of digitalis for use in the wards at Johns Hopkins Hospital, brought forward evidence that American-grown leaves were superior in efficiency to the specimens procured from all other sources, including the best English and German leaves. Among the best of the specimens they assayed was a supply from the Pharmaceutical Experiment Station at the University of Wisconsin. This leaf is now used exclusively at the Johns Hopkins Hospital.

The variations in activity of different specimens of the drug has excited considerable interest among pharmacologists and clinicians and the matter has been considered from many standpoints within the more recent years.²

By referring to any authority on the subject of cardiac medication, it will be seen that the first drug discussed is digitalis. Crofton³ says: "It is the chief representative of the group of

heart tonics or stimulants." Hirschfelder,⁴ in his work, "Diseases of the Heart and Aorta," in the beginning of the chapter on the effect of drugs in cardiac disease, says, "Foremost among the drugs used in the treatment of circulatory diseases are the preparations of digitalis introduced by Withering in 1785.

"It is interesting to note its history as given by him.⁵ 'In the year 1775 my opinion was asked concerning a family receipt for the cure of dropsy. I was told that it had long been kept a secret by an old woman of Shropshire, who had sometimes made cures where the more regular practitioners had failed. The active herb was foxglove. I soon found it to be a very powerful diuretic. I use it in ascites, anasarca and hydrops pectoris.'"

Hart,⁶ in a recent article on digitalis, begins with this prelude: "In practically every case of cardiac insufficiency some preparation of digitalis or its allies, strophanthus or squills, has been our chief dependence, yet every practitioner of medicine is impressed with the variable outcome he has obtained with digitalis in these conditions."

The exact chemistry of the active constituents of digitalis is still somewhat in confusion though

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

its therapeutic effectiveness has been developed to a high degree. Symes,⁸ in the British Medical Journal, recently, says the preparations of digitalis have been shown to possess a wide variation of activity in their therapeutic action. This variation has been found to be due to a certain extent to the leaf rather than to the process of manufacture of the various extractives. Climate, soil, weather, etc.—all have to do with the metabolism of the plant. Another factor is the proper care and preservation of the gathered leaves, which, when properly taken care of, have retained their potency for more than twenty-five years.

The strength of digitalis preparations may be estimated either chemically or by their action on animals.⁹ The chemical assay is based on rather uncertain quantitative determination of the digitoxin. The action of the drug on animals may be tested in several ways,—on frogs, guinea-pigs, cats, etc.

Much literature exists bearing upon the physiological standardization of digitalis. Eggleston¹⁰ discussed fully the more important methods and compared the relative advantages of the cat method of Hatcher and Brody and the one-hour frog method of Fraumlener,¹¹ the twelve-hour frog method of Houghton,¹² and the guinea-pig method of Reed.¹³ The methods used in attaining accurate results began with the work of Hatcher¹⁴ on the biological standardization of digitalis bodies. With the use of frogs and guinea-pigs the results vary greatly, for they are subject to many extraneous factors. One disadvantage they possess is that in the drug assay the alcoholic content must be eliminated,¹⁵ as it may cause, through chemical changes, a variation in the digitalis values. Another fault lies in the fact that the results cannot be transferred to man, and the weak heart-beat "in extremis" is insufficient to keep the respiratory center normal. It is impossible to compare the activities of different samples of such a complex substance as digitalis in a way that would give results transferable to man.

The cat method of Hatcher is the greatest step forward, and the results, as summed up by Eggleston, are as follows: (1) It is accurate to 10 per cent; (2) the results are constant from year to year; (3) there is less variation in results; (4) it is not difficult to use; (5) it is not costly; (6) it does not consume much time; (7) all types of preparations can be tested; and (8) the results can be transferred to man.

"The Cat Unit," the term devised by Hatcher

in relation to digitalis dosage, may be defined as that amount of drug calculated per kg. of cat which is just sufficient to kill when slowly and continuously injected into the vein.¹⁶ This is expressed in terms of mg. of the drug, whether it be pure principle or the leaf.

The method employed by Hatcher in establishing this unit and modified to our use is as follows: The cat is weighed, anesthetized with ether just sufficiently to keep it quiet, and is then fastened down to the operating-board. A cannula is inserted into the femoral vein and attached to a burette containing the preparation to be assayed. The infusion is used full strength and represents 15gm. of the drug to 1,000 c.c. The heart-beat and respiration are recorded, then 10 c.c. of the solution is allowed to run into the vein from the burette in five minutes, then 1 c.c. every two minutes until the heart stops. Frequent record is made of the heart and respiratory rate, and note taken as to their condition. The heart stops before the respiration, and the stop is usually accompanied by a loud cry and followed with several gasps.

The total amount of solution used is noted, also the time and rate of administration. The cubic centimeters per kilogram are estimated. This averages, in our better grades of leaf, from 7 to 8 c.c. per kilogram. The weight of digitalis represented in the solution used is calculated, and is expressed in terms of milligram of drug per kilogram of animal weight. Six animals should be used for accurate results, though two or three are sufficient for ordinary dose-determination. All calculations are based on normal totals; aberrant amounts indicate undue tolerance.

Variations are not great and extraneous factors are unimportant. Eggleston,¹⁷ in reporting 300 assays by this method, found only 2.7 per cent of cats were abnormal. The influence of sex, *per se*, is negative. Pregnancy and lactation may make a variation of as much as 50 per cent. There is a slight seasonable variation in cats,—results are less uniform in the heat of summer,—though our results show that pregnancy or lactation causes the greatest disturbance in results. Even during the hotter summer months our figures were constant. Maturity and obesity give a slight variation. Cats from different localities show less variation than frogs or guinea-pigs.

The tincture and infusion show the greatest stability, and their difference, except in concentration, is negligible, as they are made up from standard assayed stock by accurate methods.

There may be considerable difference in activity and stability in preparations as ordinarily compounded by various pharmacists from their crude stocks.

The dosage of digitalis has always been an important problem, and the quantities used have varied, as have the results.

Recently Haskell,¹⁹ at the Medical College of Virginia, in an investigation of the rate of absorption of digitalis preparations, found that the official tincture is absorbed more rapidly from the gastro-intestinal tract of cats than the infusion, and that the three special preparations,—digipuratum, digalen, and digipoten,—possess no advantage over the official tincture, though the alcohol present in the tincture delays absorption of the active principles when injected subcutaneously in guinea-pigs.

The fact that the tincture is absorbed more rapidly from the gastro-intestinal tract is of importance, for the longer delay allows a longer time for the action of the digestive juices to act on the glucosida, causing, according to Hale,²⁰ more or less destruction of these later.

Hatcher & Eggleston,²¹ in experimenting on cats along the same lines, show that the infusion is absorbed from the gastro-intestinal tract more slowly than the tincture, and that the same occurs after the intravenous injection.

Eggleston²² has recently brought to the attention of the profession a safe method of digitalis administration, requiring careful observation, but securing, in the majority of cases, the most marked results. His methods embrace the following considerations: the strength of the digitalis to be used must be known; it is determined in cat units; and upon this the dose for man can be based.

In estimating dosage, the average dose of the tincture, administered orally, required to produce full therapeutic effect or minor toxic action is 0.146 cat unit per pound, or about 0.146 c.c. of the patient's body weight. If the patient weighs, say, 130 pounds then $130 \times 0.146 = 18.98$ c.c. The average dose of infusion is 0.141 cat unit per pound of the patient's body-weight. The average dose of digitoxin is .066 cat unit per pound of the patient's body-weight for crystalline digitoxin.

If a cat unit standardized preparation of digitalis is not obtainable, the following method can be used: consider the best grade leaf as having a cat unit strength of 100 mg., the cat unit could then be used as the basis of calculation for the

required dose. Take 0.10 cat unit as the average therapeutic dose of a high-grade tincture or infusion for each pound of the patient's body-weight; the figure 0.116 cat unit per pound of the patient's body-weight for the infusion. Thus the total therapeutic dose is calculated, and the dose is divided according to the rapidity desired to obtain full therapeutic effects. The computed dose for intense action is given one-third to one-half the full amount, following in four to six hours with one-fourth to one-third, then the remainder in two smaller doses at from four to six hour intervals. The full therapeutic effect is obtained in twelve to thirty-six hours.

Recently we have commenced in man the intravenous injection of both the diluted tincture (1-10) and the infusion, obtaining at once the digitalis action with no harmful results. The intravenous dose employed is one-half the Eggleston dose. This is preliminary, and we hope to present a more extensive report later.

The activity of the various species of digitalis grown by the Department of Pharmacy at the University of Minnesota is greater than that of the best grades of leaf we have been able to procure elsewhere. Though we are unable to procure a second-year crop wintered outside the hot-house, our first-year leaf outranks in potency digitalis from any other source.

The patients at the University Hospital receiving the Minnesota leaf show the usual results.

On looking up the reason given for the use of the second-year leaf, I find it dates back to the time of Withering. Sharp,²³ of Lancaster, in a highly interesting historical article on digitalis, says, "Foxglove was introduced into regular medical practice by Withering, of Birmingham, in 1785. Ever since then his directions as to the time of gathering have been religiously followed,"—that is, the leaves are to be collected at the supposed time of greatest activity of the plant, at the time of flowering. This means that first-year plants would be entirely rejected. Further, it used to be directed that plants growing wild be employed. The first authoritative statement as to the use of first-year leaves was made by Pereira,²⁴ who says that "first-year leaves which are considered to be of inferior quality are sometimes substituted for them [second-year leaves]."

Christison²⁵ says, "The leaves are usually gathered, according to the original directions of Withering, in June or July, or when the plant is com-

ing into flower, but this is a needless restriction at least, for I have observed that their bitterness, which probably measures their activity, is very intense, both in February and September, and that their extract is highly energetic as a poison in April before any appearance of the flowering stem."

Sharp²⁶ concludes the discussion, "We were struck with the fact that leaves of the first-year plants were intensely bitter, therefore likely to contain much glucoside. Further, a good reliable tincture could be made from first-year plants alone."

The following chart shows the first series of standardization of digitalis purpurea:

No. of animals	Specimen	Serial No.	Year	Solution employed	C.c. per kg. of cat	Mg. per kg. of cat
4	Wisconsin	1	1914 1st yr.	Infusion	7.13	107.
3	Wisconsin	2	1915 1st yr.	Infusion	7.1	106.5
5	Wisconsin	3	1915 2nd yr.	Infusion	8.4	126.
3	Minnesota	a	1914 1st yr.	Infusion	7.7	115.5
3	Minnesota	b	1914 1st yr.	Infusion	7.3	109.5
3	Stafford Allen, Eng. Allen & Sons	c		Infusion	7.4	111.
3	Minnesota	d	1914 1st yr.	Tincture	1.06	106.

Among the various species of Minnesota digitalis we assayed (grown by the Department of Pharmacy, University of Minnesota) ferruginea, lutea, lanata, grandiflora, and others, show they equal the purpurea, or the form ordinarily used. There exist some twenty-three or more species and numerous varieties. Ferruginea, lutea, and lanata exceed the purpurea in toxicity, the last two belonging to the narrow-leaf form,²⁷ and have been found true to name and reproduce themselves in pure stand. During our observations in assaying the various forms, the species lutea was prominently noticed. It ranks in toxicity with the higher grades of digitalis purpurea, but the lack of irritation and the quiet lethal period in cats was so marked as to suggest the use of digitalis lutea in man with the hope of finding here a preparation causing less than the usual gastro-intestinal irritation. As a result of this suggestion, Dr. White and I are now using both the tincture and the infusion of digitalis lutea clinically in the wards of the University Hospital with the best of results, and we hope later to present data on this but little known member of the digitalis family.

In conclusion let me emphasize (1) the necessity for a greater care in the use of digitalis, (2) the necessity for a standardized drug, and

(3) an accurate dosage. There is no need of using the exorbitant priced extractives if these three points are followed.

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DISCUSSION

THE CHAIRMAN (DR. GEO. DOUGLAS HEAD): This is a very important and practical question for all clini-

cians. Digitalis has been used for many years indiscriminately and without due attention being paid to the source from which it is obtained.

DR. MORRIS: This exhibit of digitalis was grown by the School of Pharmacy and prepared by Dr. Newcomb. Large amounts are grown in the Botanical Gardens at the University.

(Referring to an exhibit shown to the section.) You can later come forward and observe it. Here is the 1916 crop (indicating), the different forms of the dried leaf and the various forms of digitalis.

The digitalis lutea spoken of is of the narrow-leaf form. The leaf is very narrow as compared with the official digitalis purpurea (indicating potted plants of each). By experimentation we found that digitalis lutea ranks in toxicity and strength with the older form "purpurea," which has always been used, and we also found that, exhibited clinically, little gastric irritation was produced by its use. We hope to present further reports at the next meeting.

After the close of the meeting if you will come forward you may note this exhibit of the various forms and preparations, showing the drug in the various stages from the picking to the cured type of leaf as used in making the infusion and tincture.

DR. E. L. TUOHY (Duluth): Does the University expect to grow this commercially?

DR. MORRIS: They are supplying a number of commercial houses now. It can be secured through your drug house in case you desire to use it, and it can be supplied in considerable amount.

DR. TUOHY: The tincture or just the leaves?

DR. MORRIS: Just the leaves.

DR. TUOHY: Are the leaves standardized?

DR. MORRIS: Every pharmacist should standardize his own leaves just before the tincture is made.

DR. L. G. ROWNTREE (Minneapolis): Each man does not have to assay it. The assay is good for at least a year, or for many years.

DR. MORRIS: If properly cared for. There have been leaves on the shelves which will retain their potency for twelve or fifteen years.

DR. TUOHY: How about the powder or extract?

DR. MORRIS: Under light conditions—if it is kept away carefully from the light for a year at least—the leaves will retain their potency,—that is, where they are kept dry and dark.

DR. TUOHY: What is the process of drying the leaves?

DR. MORRIS: They use oven-drying. That is more efficient than the former methods. At the University they use the oven-drying method, using a temperature of from 70° to 80°.

DR. TUOHY: I would like to ask Dr. Morris if these two plants represent the relative vigor of growth of the two varieties.

DR. MORRIS: No; I think these were taken up from the younger plants.

DR. A. D. HIRSCHFELDER (Minneapolis): As regards the question which was just raised,—of the importance of the method of preparation,—it seems to depend upon the fact that the active principles of digitalis are glucosides, and are split into an inactive substance and a

sugar by an enzyme within the leaf, whose action is somewhat similar to that of the ptyalin in the saliva. Therefore it is important, in preparation, in order to keep an active preparation, to kill this ferment quickly, and that is done best, as Dr. Morris has said, by a rapid oven-drying with a good fan working. That is done very carefully in this preparation. It seems that that precaution in preparation is perhaps the most important of all the steps in getting a good digitalis leaf which will keep. It is most important that that be done as soon as the leaf is picked; otherwise, if the leaf stands for a few days, it will simply digest itself or digest the active principles of the digitalis.

I would like to emphasize once more the great debt we owe not only to Dr. Morris for his very careful study and for helping to put Minnesota on the map as a digitalis-producing community, as well as a wheat state, but also to Dr. Newcomb, who began these studies, and who has demonstrated the value of this Minnesota-grown plant, and of the fact that the first-year digitalis is just as good as the digitalis of the second-year crop.

There is one point still further that Dr. Morris' studies of the comparative species brings out, and that is the possible importance of digitalis lutea instead of digitalis purpurea. It is not widely known, but it is a fact, that a certain number of cardiac psychoses, or the psychoses that occur in cardiac disease, in patients who are taking digitalis is due to the digitalis itself. In fact, one patient of Dr. Elstner, of Albany, a patient with disease of the heart who was taking digitalis, became insane and committed murder while he was under the influence of digitalis. At other times he was sane. On this point, which has been particularly emphasized by Mr. Hall, the assistant librarian of the Surgeon-General's Library, Washington, the man was acquitted.

It is quite possible, or at least we hope, that digitalis lutea, which, as Dr. Morris has shown, has less effect on the nervous system, may obviate this danger, and may therefore come ultimately to supplant digitalis purpurea in clinical use.

DR. ROWNTREE: The importance of this communication is obvious. A year ago, with Dr. D. I. Macht, I published an article in the *Journal of the American Medical Association* on "The Standardization of Digitalis and the Potency of American-grown Digitalis." We advocated the use of a digitalis grown in Wisconsin, which we found to be more potent than the English and German leaf. I now see that I picked the wrong state, but at the time of that publication I was not connected with the University of Minnesota. Although the Wisconsin leaf was used exclusively in the wards of the Johns Hopkins Hospital after our investigation, the Minnesota leaf is just as good, and there is no good reason why we should go out of the state for digitalis. Why should we use German and English leaves when we can grow as good and better digitalis in Minnesota?

The function of a University to my mind is to reach out and meet the needs of its people. Here we are able to do it. Dr. Newcomb has demonstrated that Minnesota can grow excellent digitalis, and Dr. Morris indicates that it can meet the need of the medical profession. We can grow our digitalis, and it is possible that the future may see a demand from other countries for American or, maybe, for Minnesota digitalis.

It is desirable to use standardized preparations of digitalis. A variation of over 300 per cent was found in the potency of various samples of leaves investigated by us in Baltimore. The Minnesota profession should use a standardized home-grown digitalis.

DR. MORRIS (closing): I desire to add just one word in closing. Dr. Newcomb stated yesterday that there always was some digitalis left after supplying the needs of the various pharmacists of the state. You can feel assured during the coming year that there will be some

Minnesota product for your use, and it can be had by applying for it.

DR. G. D. HEAD (Minneapolis): I would like to ask Dr. Morris if a physician by simply specifying in a prescription the Minnesota leaf can now get it?

DR. MORRIS: He can get it now through arrangement with his druggist, who can easily obtain it.

DR. HEAD: That is a very important point.

DR. MORRIS: That will bring the lutea to you at this time.

OBSTETRICS IN THE RURAL COMMUNITY*

By M. D. WESTLEY, M. D.

COOPERSTOWN, NORTH DAKOTA

The difficulties in obstetrics as practiced in rural districts are so many and varied that we often feel as though it were futile to talk of applying modern methods. We meet all sorts of people, from the primitive up to the most highly cultured classes, and we are expected to give them all the best without hospital conveniences. Those who have no experience in this field of work do not know how difficult it is to create conditions that will make the ordeal reasonably safe for the mother and the baby.

During my twelve years of work in a rural community, I have by the help of ideas from specialists and books, and by my own little additions, succeeded in improving my methods in a few details which may seem unimportant, but which have made the work easier for me and, I think, safer for the mother and the child.

We see so many cases emerge seemingly unscathed under the most unfavorable conditions that we are tempted to relax, and trust to luck, as generations before us have done; but, in our better moments, we feel that there is an opportunity for progress and service in this line, as well as in other lines, of work.

A case came to my notice (not in our community) some time ago, where the attending physician, being in a great hurry, tried to hasten the first stage by introducing his fingers during each contraction. When this seemed of little avail, he gave a full dose of pituitary extract. As this made the pains unbearable, he gave chloroform, and attempted the use of forceps. By this time the nurse prevailed upon the husband to ask for consultation. This stopped the interference, but it had already caused a tragedy. When, upon the arrival of the consultant, the fetal heart was

sounded, it was found that the baby was dead. Later it was plainly seen that the forceps was to blame, having been applied over the face and occiput. The mother, fortunately, recovered from the infection which followed. This was a normal case, and should have been so terminated.

This case is a decidedly extreme exception. I believe the work done in the country, generally speaking, is good; but is it not possible that similar cases, though few, are in a measure to blame for the popular demand for midwives? And these cases, drifting to the city surgeon for repair, give him an unfair idea as to the kind of work that is generally done in the rural districts, subjecting us all to unfair criticism.

What can we do to make our work more efficient in the rural communities so as to become indispensable to the expectant mother? Permit me to mention just a few things which I think may be applicable to the average case.

Encourage visits to your office by making thorough examinations, including blood-pressure and hemoglobin tests and pelvic measurements in primiparae. Determine the position of the fetus, explaining that, if abnormal, it can usually be changed. One may become fairly proficient in changing the position, if it has not been practiced, by consulting a modern text-book. These examinations and their purposes explained will bring to your office many who do not consider it necessary.

I find the books sent out by Children's Bureau of the U. S. Government, "Prenatal Care" and "Infant Feeding," very satisfactory. Preaching against granny quacks and goose-grease is of little avail. Give your patients your best efforts and something good to read, and the quack will gradually be eliminated.

In order to be prepared for the average case

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

during labor, I carry the usual obstetrical supplies, such as instruments, antiseptics, soap, cotton, gauze, etc.; and besides these a few that are perhaps less common, such as an obstetrical Kelly pad, a gown, gloves, and obstetrical leggings, and towels. In order to carry these sterile or at least clean, with as little trouble as possible, I had some large canvas envelopes made, which are a great help. The leggings and towels are wrapped in a piece of muslin, which when unfolded on a table makes a sterile place for supplies. I speak of these details because we find it hard to put into practice what we have learned when placed in a home with no conveniences, with sometimes not even a clean towel.

One of the instructions given to the patient is to take an enema and a hot soap and water bath at the onset of labor, unless precipitous, putting on a clean night-gown. Explain in a few words that everything that comes in contact with her must be made sterile by boiling. This usually eliminates from the bed piles of dirty rags so persistently encountered. We may talk too much at times, but I think it is more commonly true that we do not explain and talk enough.

Rectal examinations should be made. I have very seldom found it necessary to make vaginal examinations since I began to make rectal explorations. Vaginal examinations are to blame for a great many mild infections causing an elevated temperature for a few days, as also for the more severe recognized puerperal infections. Carry an extra pair of gloves and make rectal examinations.

A safe analgesic, especially for the tedious first stage of labor, would indeed be a great blessing to the mother and also to the obstetrician. Here and there we get a report of the use of scopolamine and morphine. The medical profession as a whole condemns their use most emphatically, at least in rural districts.

Watch the fetal heart during labor, especially if irregular and in malpositions, such as a right occipitoposterior. A rapid delivery is sometimes found to be necessary where not expected.

Pituitary extract is a powerful remedy, and, when indicated, works like a charm. It will do away with the use of forceps in not a few cases. Any new remedy, however, is likely to be used indiscriminately. If dilatation is not complete, pituitrin in large doses is, of course, a dangerous agent to use.

Avoid lacerations of the perineum by giving an anesthetic during the last few pains at least,

so as to prevent too rapid delivery of the head.

Removal of the placenta by internal manipulations should be avoided. Wait up to one hour, using Crede's method. Even with strict asepsis there is danger in going through the vagina, which is usually septic, into the uterus, especially in the third stage of labor.

In repairing the perineum, I have found, not ten-day or twenty-day, but forty-day catgut the most satisfactory. This does not last too long because of the decomposing agencies in these cases. Do not keep the mother on her back for 24 hours. It is not necessary or advisable.

After the first few hours, encourage different positions in bed, including Sim's (almost on the stomach). This is said to prevent in a measure the tendency to a posterior displacement of the uterus.

Cord-infection may usually be prevented, even in unfavorable surroundings, by tying off next to the skin margin, leaving the tape long enough so that a piece of gauze may be tied on, covering the stump.

Infant pulmotors in the hands of specialists have not been found to be of any material advantage over the old methods of resuscitation except that they will remove mucus from the throat.

I would like to emphasize again that too early interference in obstetrics is responsible for a great deal of trouble. If we exercise a sufficient amount of patience and our best judgment in spite of the pressure brought to bear by the patient and relatives, we are usually rewarded, not only by an increased appreciation, but by the knowledge that we have done our duty.

I have enumerated a few irksome details relative to obstetrics in the rural community. It is not my intention to pose as a specialist, but rather to emphasize the need of giving our best efforts in this line of work among all classes and under all conditions. This nation is fast becoming what Europe has been in the past, a leader. Europe's sun seems to be sinking. It is my opinion that the leaders in medicine, as also those of us who are in the humble ranks of the rural practitioner, will, each in his field, measure up to the tasks before us.

DISCUSSION

DR. E. A. PRAY (Valley City): The nearer we can come to aseptic perfection, the better our results are going to be. In the early days we were called to much more difficult cases, proportionately, than we are now. Some of you know that, in the earlier days, if a man were called to an obstetric case he might reasonably expect to find it a difficult one because the neighborhood

midwife had failed and the delivery had not been accomplished, and, as a result, his work was much more severe. Instrumental cases, in proportion to the number of cases delivered, were greatly in excess. The midwife in that day I think was much more competent than the average midwife of today; she was a more intelligent woman of the neighborhood, and was called upon simply because she was the good sort, willing to do that work. I find in our community the midwife of today is the woman who can be obtained cheaply; \$5.00 a week is a good price and she doesn't earn fifteen cents.

The filth surrounding some of these cases is extreme, and the precautions adopted by Dr. Westley are certainly to be commended because of the extreme care and the very fine technic which he has developed for use in rural communities. Of course, the hospital is ideal for obstetrics. If we have these cases in the hospital of course we can handle them well, but we can have them there only once in a while.

Another thing that adds to the betterment of present conditions in rural communities is the fact that the homes of today are much more cleanly and sanitary than they were in the days gone by. Those of us who have been here for a number of years have had this sod shanty proposition. The aseptic proposition is very materially improved. We seldom come to a home now but what they have some antiseptic solution,—lysol, carbolic acid, or whatever it may be. They understand more fully the use of those things than formerly, and they understand much more fully the nature of keeping clean and how to do it.

Of course we should consider one thing in these cases, that the remuneration is not adequate in most instances. This is an operation, and one that requires the most care, and the necessity for skill is extreme, the necessity for care is urgent; and yet the pay is exceedingly poor. I feel that the men who are doing obstetric work, as are some of the men in rural communities, for ten or fifteen dollars, are not paid as they should be, but some of the men, however, do not earn ten dollars.

Let the obstetrician be a dignified obstetrician; let him not try to compete with the midwife; let him be a competent engineer of a delicate mechanism, not an arm-pulling, hand-holding automaton.

DR. S. A. ZIMMERMAN (Valley City): Dr. Westley's brief reference to a safe analgesic for relieving the first and second stages of labor gives me an occasion to refer briefly to my experience with scopolamine-morphine anesthetic.

The remarks that I am about to make will probably be unpopular, but I shall give my defense first and experience afterwards.

Seven years ago as an interne in St. Luke's Hospital, where Dr. Bertha Van Hoosen was one of the attending physicians, I had the opportunity of observing the morphine-scopolamine anesthetic in a large number of cases, as all of her operative work was done under this anesthetic. This form of anesthesia made a great impression on all of us internes, because the patients showed little or no nervousness before the operation, and the post-operative reaction was such that very often you would hardly notice that there was any shock at all.

Some very striking cases still come to mind because of the peculiar psychic condition of the patients after the operation. The patient of which I am thinking and

on whom Dr. Van Hoosen had performed the hysterectomy, began to come out from under the influence of the anesthetic about three hours after operation had been performed without any apparent effect upon the pulse or general condition. The first remark which she made was, "Will I soon be operated upon?" In fact all of her cases seemed to make more rapid and fine recoveries, none showing the severe post-operative shock that is often found.

I had almost forgotten this interesting anesthesia until about two years ago when I had a case that needed a major operation. I found a very badly acting heart, and her urine showing a large amount of albumin. So in looking for an anesthetic that would be safe I thought of the scopolamine-morphine anesthesia. That same day I had a hemorrhoid operation, and the two patients were in the same room when they came out of the anesthesia. The hemorrhoid case was anesthetized with ether and on coming out from the anesthetic became very noisy, with the pulse-rate very high, in general making quite a disturbance, while the other case, whose appendix and ovarian cysts I had removed also suspending the uterus, showed so little reaction that the nurses called me up by telephone to inform me that the patient's pulse was only 70. After that I was using the morphine-scopolamine anesthetic quite frequently in my operating work, and about one and one-half years ago I began to use it in my obstetrical work. I use it with great caution. The first case in which I used it was a primipara, 21 years old. When I arrived at her home she was quite well along in the first stage of labor, and was getting rather nervous. I gave her $\frac{1}{8}$ grain morphine sulphate and $\frac{1}{100}$ grain of scopolamine, and within fifteen minutes the patient was rather quiet. Her husband noticed the fact and said, "Isn't it fine how quiet she is?" Her mother, who had had ten children, attended the case. Everything went on quietly for three hours. I then gave her $\frac{1}{200}$ grain of scopolamine, and within two hours the baby was born. Toward the end of the second stage the mother naturally cried out a little with each pain, and as the baby was born the little old mother said, "Why, I thought labor was just beginning."

Another striking case was a multipara, this being her fourth baby. When I got to the house, she was pacing the floor, crying out terribly at each pain. I suggested that I give her something to relieve her a little, and asked her to lie down. Twenty minutes after I had given her the drug, she was silently asleep; awakening with each pain, she would bear down, and in less than an hour she was delivered of an eight-pound boy, she not knowing what had happened.

A Mrs. B. was advised not to use "twilight sleep" because of the many dangers involved. Her labor began at 6:30 o'clock at night. By 10 o'clock she was having pains that were hard to endure, and she asked that something should be given to relieve her pain. I asked whether she would be willing to take the scopolamine-morphine anesthetic; she said she would be willing to take anything as long as it would relieve her of the pain. I gave her the first dose at 10 o'clock. By 10:30 she seemed to be resting more easily. At 12 I gave her a second dose, and at 1, when all was over, she said "the last thing I remember was the clock pointing to 10:30."

Mrs. S., a primipara, 26 years old, began to have pains

at 5 A. M. At 7:30 I gave her $\frac{1}{8}$ grain morphine, $\frac{1}{400}$ scopolamine, and at 9:30 $\frac{1}{200}$ grain scopolamine, and at 11:30 $\frac{1}{300}$ grain scopolamine. At 1:30 an eight pound boy was born. Two stitches were placed to repair the torn perineum. The nurse then asked her what she wanted. The reply was that she wanted a girl. She being told that she had a fine boy she answered "You are fooling me," but on placing her hand down over her abdomen she found it was true that she had had her baby, not knowing anything about when the baby was born or when the stitches were introduced.

I am rather enthusiastic about this anesthetic, and am going to use it in my work, because I believe it is perfectly safe. In the operative work when one uses this anesthetic for general anesthesia, three doses consisting of $\frac{1}{4}$ grain morphine and $\frac{1}{400}$ grain scopolamine are given at intervals of an hour. In the obstetrical anesthesia I use but one dose of morphine and but one full dose of scopolamine consisting of $\frac{1}{400}$ grain, using $\frac{1}{200}$ of a grain for the second dose, repeating that as often as is necessary to keep the patient from realizing the hard pains that attend the first and second stages of labor.

DR. W. P. BALDWIN (Casselton): I remember very particularly I was called out in the morning about 6 o'clock by a German who said his wife was having a baby and was bleeding. I hastened out there and found a complete placenta previa, and it was delivered. Now, the treatment in the marginal cases might have been very different. We might have had a lot of time to stop and consider what we were going to do, but in this case delivery was important and must be done at the time, or that woman would have bled to death. The bed at the time I got there was covered with blood and demanded immediate delivery. And I just want to emphasize the difference between the marginal and complete cases.

DR. R. H. BEEK (Lakota): The instructions or recommendations of the men who are using these drugs extensively are, that the scopolamine-morphine anesthetic is suitable to be used only in a special hospital and in a specially prepared room in that hospital. The condition obtained by use of scopolamine-morphine is not anesthesia but analgesia. The patients suffer the pain, but have no recollection of it subsequently.

I have had no actual experience with it, but from my reading it seems to me that the general consensus of opinion is, that it should be used only under the conditions which I have said, that disturbing sound, light even, in the room, to a large extent vitiates the effect you are after, and I was just wondering (Dr. Zimmerman is in general practice in Valley City) how it is he is able under the circumstances under which I presume he practices, to get such excellent results when these instructions by the authorities, or men who we think are authorities, would imply it should be used under only ideal conditions, those conditions being a room in a place where all sound and light are excluded and where everything is absolutely quiet.

DR. ZIMMERMAN: I can answer that very easily. In the first place, probably half the cases I have had have been in the hospital and the other half in homes. Where do you find less noise, in the home or in the hospital? We all know that when we have an obstetric case at home, if they have children in the home,

they are usually kept away from the room where the work is being done; in fact, are often sent out to the neighbors. I have found the country home or home in town as quiet as any place I could get in the hospital, often quieter. Then, too, as far as keeping out the light, I have gone to the extreme of bandaging their eyes and putting on dark glasses, but I think that is more for effect than for results, because the patient gets the result or effect of the drug without going to these extremes. I believe it is not essential. I will go a step further. You might have asked me why I have used it without having a trained nurse. I have used it in several cases without having a trained nurse there to assist me, but I believe I know as much as a trained nurse, and I believe I could tell the condition of a patient myself as well as a trained nurse could, so when I have a competent assistant I believe it safe to administer it without having a trained nurse. I do not believe it is necessary that we have an especially prepared hospital or have a special nurse or assistant, but, if we are competent to do ordinary work and know the effect of these drugs, we can do it very nicely, if we take more care. This must be kept in mind. When I use scopolamine I expect to give more time to my patient than if I did not use it. I cannot go to another room and go to sleep. I have to be there and keep close track of the progress of my patient because, as I said before, the delivery is often much more rapid than we anticipate, and for that reason one has to keep very, very close watch of the condition of the patient. I might add that I believe pituitrin can be used in connection with scopolamine-morphine first, and then, at the end, when I find the thing is progressing slowly or the pains are hardly strong enough to make a good end of the labor, I have the pituitrin to help out, and it does very fine work.

DR. W. P. BALDWIN (Casselton): We know some of the men use scopolamine in connection with the morphine, and some use narcophen, which is probably another name for morphine. For probably five or six years I have used morphine and scopolamine in selected cases; sometimes I have been perfectly satisfied with my results, and other times I have been very much dissatisfied. Sometimes possibly it was due to lack of knowledge in administration, but I have gotten results directly contrary to what I would expect. For instance, we give morphine and scopolamine to one patient, and she acts nicely and everything is all right; we give it to another patient, and she exhibits all the nervous symptoms that we do not want to see. As far as complete anesthesia is concerned and the patient not knowing anything about what has been done, we sometimes see that with the use of morphine-scopolamine and sometimes we do not; in fact, she knows everything that has been done. Now, whether this is to be a method which is to be commended or not, I do not know. I tried it a few times, and sometimes I think it is fine and sometimes I do not know whether it is or not.

DR. WESTLEY (closing): There were really no questions asked that I can answer. My statement in regard to the pulmotor agrees with these gentlemen. I have had no experience, and the statement I made was given directly from Dr. Adair, of Minneapolis, one of the noted specialists in obstetrics, who told me he could see no advantage in the use of the pulmotor except

that in cases where the throat was full of mucus it would draw that mucus out. That, of course, might be an important advantage in some cases.

In regard to scopolamine-morphine: If we should take a vote on that this afternoon, I think that my statement in the paper would be upheld. I said that the medical profession as a whole condemns the use of scopolamine-morphine in the rural districts, and I still think so. I am very glad to note, however, these reports of its use by these gentlemen, and I have no experience to offer.

The question in regard to the hospital is the only

thing I will answer. I believe that the ideal home is the ideal place for the mother and the baby, but we have so many homes that are not ideal that in many cases the hospital would be much to be preferred to the home.

I find it impossible in my practice to have trained nurses in all cases. I gave this demonstration of what I do in these cases where we are dealing with unfavorable conditions and where we simply have to do what is best, irrespective of what would be best under ideal conditions.

INDICATIONS FOR CESAREAN SECTION*

By W. A. COVENTRY, M. D., F. A. C. S.

DULUTH, MINNESOTA

It is not many years ago that the operation of Cesarean section was limited to really very few cases, with indications in these cases such as to make the operation imperative. Unfortunately, the mortality was very high, probably due to the fact that many of them had first been tampered with and had become infected, and also to the fact that abdominal operations in those days gave a much higher mortality than at the present time. Then came a period in which, in all major operations, especially abdominal ones, the mortality rate was as low as 2 to 3 per cent. As soon as we felt more certain of our results, then the indications for performing this operation became greater in number, and I fear that, for a time, the operation was performed in more cases than was absolutely necessary, and the privilege of performing this operation was, to a large extent, abused. However, I think at the present time the operation is on a comparatively firm basis, and that the indications have assumed more or less definite form.

The type of operations can be divided into (1) abdominal, (2) extraperitoneal, and (3) vaginal Cesarean section.

Under the head of abdominal Cesarean section the indications can be classed into two great groups: the absolute and the relative. Under the title of absolute, one would place, first, the question of true conjugate; and, drawing our opinion from a large variety of writers, we would say that in any case where there is a true conjugate of seven centimeters or less, abdominal Cesarean section is the operation of choice, bearing in mind, however, the size of the child, considering it a normal child at full term.

Secondly comes the class known as obstruction of the soft parts, under which head one would place cancer of the cervix or the rectum, regardless of the degree of the extension of the carcinoma. It has been my fortune to see one such case, in which I did a Cesarean section, but, as usually happens in these cases, the carcinoma, after delivery, spread very rapidly, and shortly afterwards the mother died from cachexia.

Next would come the question of the atresias of the vagina. In these cases, however, Cesarean section is not always indicated. Should one have a double vagina, or if there are bands stretching across the vagina which can be divided, one would divide them, and then deliver in the normal way. The same can also be said of stenosis of the vagina, but there are reports of cases where atresias were of such a nature as to demand Cesarean section.

Next comes the question of pelvic tumors. Large ovarian tumors, which are lodged in the hollow of the sacrum or which in any way obstruct the parturient canal, offer an excellent indication for Cesarean section. Some writers have suggested that we puncture these cysts, and allow birth to take place in the natural way; but, in my opinion, this is not a good surgical procedure—far better do a Cesarean, and remove the cyst at the same time.

Fibroids of the cervix also offer another indication for doing Cesareans, especially in that class of fibroids which become impacted in the hollow of the sacrum and cannot be displaced or shoved up out of the way. We know, of course, that certain fibroids sort of peel back from the cervix, allowing the cervix to fully dilate, and a normal delivery to take place. I have found several case-reports of osteochondroma of the pel-

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

vic bones in which it was absolutely impossible to think of delivery by the normal way; and I also find one case of double ankylosis of the hip in which a Cesarean section was absolutely indicated.

When the uterus ruptures, either primarily or secondarily, from a previous Cesarean scar, abdominal section, of course, must be made. This brings up the question of "once a Cesarean always a Cesarean." Findley, in a very admirable paper, says this is not absolutely true, that, if infection has not taken place and the wound has been thoroughly stitched, we need have comparatively little fear of the scar rupturing. However, it may be laid down as a general rule, that once a Cesarean, at least the next case of labor must be treated in a hospital, with all preparations made to do a second Cesarean if there are indications of rupture or threatened rupture of the uterus.

Under the heading of relative indications, we have that type of cases in which obstetrical judgment and obstetrical skill play a large part. If the true conjugate is 7 or over, even as high as 10 or 12, sometimes Cesarean section is indicated. It is all-important to take into consideration the relative size of the child's head and whether it can be forced down into the inlet of the pelvis. In other words, the passage and the passenger must be considered.

Holmes thinks that this class of cases is the one that should first go to labor, in contrast to Brown, of Rochester. He says that the so-called test of labor is really an excuse for incompetent obstetrical diagnosis. All of us have seen these borderline cases, and been surprised many times by the fact that the test of labor has so dilated the cervix and moulded the head that delivery was possible by the normal method. This is the class of cases in which a high-forceps operation is often done. Once in my earlier experience I did a high-forceps operation, and early became convinced that such an obstetrical procedure was not justified in any case. I have found it a pretty good rule, that, if you are tempted to do a high-forceps operation, it is much better to sit down and think it over, and then set about again to make a more careful diagnosis. Certainly, by this time things will be ready and so shaping themselves that you will be convinced such an operation is not necessary. However, if things do not shape themselves and you are sure that a high-forceps operation is necessary, you

had better do a Cesarean section. It will be better for the mother and better for the child.

Eclampsia offers another relative indication for this class of cases. Here, again, we find a large diversity of opinion: Peterson believes in doing a Cesarean section in practically all cases of eclampsia, and Davis believes that many cases can be successfully treated by the Stroganoff method.

There are many things to be taken into consideration, such as the following:

1. Have you ever seen the case before, or is the case one which comes to you for the first time?
2. Have you treated it for toxemia?
3. Is the eclampsia the crisis in a case of previously treated toxemia?
4. Is the case a primipara or a multipara?
5. Is the cervix easily dilated, or is it very rigid?
6. Has labor begun?
7. Is it at term, or is it seven or eight months along?

This much we do know: that the mortality from eclampsia, for the mother as well as for the child, is very much larger than it is for Cesarean section. It goes without saying that threatened eclampsia should be absolutely excluded as an indication for Cesarean section. Surely, nothing is so distressing as to see a patient with eclampsia having repeated convulsions, and in no class of cases is the imperative need for something to be done so great as in these cases. Peterson said that "until he had a better guide of toxemia than convulsions he would be guided by the convulsions in his method of treatment." It goes without saying that practically all cases of eclampsia recover, or, it may be better to say, improve, when the uterus is emptied. Whether it be emptied by the vagina or by an abdominal Cesarean depends upon several conditions: If the patient is a primipara, at or near term, with the os closed and a rigid cervix, the Cesarean section offers the best prospects. If, however, the cervix can be easily dilated or is already partially dilated, the patient being in labor, in cases of multiparae, normal dilatation of the cervix and the application of forceps is certainly the better thing to do, and is far safer for both mother and child.

The question of accidental hemorrhage not due to a placenta previa is not, to my notion, a sufficient cause for Cesarean section. Either the mother is exsanguinated or else the baby is dead.

Neither of these having happened, the cervix can be packed, and labor brought on in the normal way. To some extent, the same rule governs cases of placenta previa. What is the condition of the mother? Is the child living or dead? Have we a marginal or a central placenta previa? I am convinced that in marginal placenta previa Cesarean section absolutely is not indicated, and that the Braxton-Hicks method is far safer for the mother and for the child. In a central placenta previa I can see, then, more necessity for doing a Cesarean section. The chances for getting a live baby, of course, are very much greater, and the question of a live mother depends largely upon the amount of hemorrhage that has taken place previous to operation. Still, I recall one case in which Cesarean section was done for a central placenta previa, and after section the lower segment of the uterus would not contract, and the patient quite promptly bled to death. I would suggest that in these cases the uterus be quite firmly packed so as to be as sure as one can be that bleeding does not take place from the placental site.

Prolapse of the cord offers absolutely no indication for Cesarean section.

In vaginal Cesarean section I would place only one indication, namely, eclampsia. Then one must take into consideration many of the same factors that are taken into consideration in doing abdominal section for eclampsia. Surely, one would not attempt vaginal Cesarean section if the fetus were very large or if the vagina were rigid. One thing in its favor is that, if you do it once you do not necessarily have to do it the second time. But in those cases coming at eight months or prior in which the vagina is fairly roomy and the size of the fetus is not great, vaginal Cesarean section is, in my opinion, more to be preferred than abdominal Cesarean section.

Under the indications for extraperitoneal Cesarean section, all of the indications set forth for abdominal Cesarean section are here indicated. In addition, however, let us say that this operation is practically indicated only in cases that are infected or very likely to be infected. In one's own practice, that is, if he has attended the case, he may feel pretty certain of his asepsis; and this operation will probably be rarely indicated, but, we meet it in that class of cases that have been meddled with by a midwife or an incompetent obstetrician. Frequent examinations having been made and forceps having probably been applied without effect, the case is then sent

to the surgeon for operation. The question arises then, Shall we do a classical abdominal section with hysterectomy, or shall we do an extraperitoneal Cesarean, and save the uterus for some future pregnancy? Symphyseotomy and pubiotomy have been recommended in these cases; but, after one has seen several cases of pubiotomy performed by men who have a large reputation in this line of work, one is not eager to do this operation. The extraperitoneal type of operation, in my judgment, is the better operation to do in these infected cases.

When one looks back over the cases that he has attended during the last ten years, he will probably find many cases that should have had a Cesarean section performed, and many a mother would be far happier today after this procedure. Then, again, when one looks back and reviews not only his own cases, but those of others in his community, he will find an occasional case that was all primed for section, in which the baby was too soon born by the natural passage, because the real obstetrical diagnosis as to the relative condition of affairs had not been made. This applies particularly in the borderline cases I have mentioned.

Far too many operations for Cesarean section have been performed by surgeons who were not obstetricians. All obstetricians should be surgeons; at least they should have enough surgical skill and judgment to be able to do a Cesarean section whenever indicated. And does not this give us the key to the indications for Cesarean section? Better obstetricians, better obstetrical diagnosticians, and better obstetrical surgeons. In this way, I believe the indications for Cesarean section will become, not more frequent, but probably less frequent than they are at the present time.

DISCUSSION

DR. J. C. LITZENBERG (Minneapolis): A sane paper like Dr. Coventry's is timely, and I hope it will have some influence on the epidemic of Cesarean section which has been sweeping over the country because, following all surgical operations which have been followed by success in expert hands, there is apt to be an epidemic of operations by incompetent operators as the result of the work of incompetent diagnosticians, bringing discredit upon a good operation.

There is a definite broadening of the indications for Cesarean section. When there is a tendency for a justifiable broadening of the application of any operation, it is apt to fall into disrepute because of too many operations. At the last meeting of the American Medical Association it was reported that in one of the cities in Illinois during a period of several months more

babies were born by Cesarean section than by the vagina.

Dr. Coventry has indicated where there has been a broadening of the indications for Cesarean section. The presence of a tumor in the lower segment of the uterus is not necessarily such an indication. I have seen a tumor on which four or five competent obstetricians were in consultation and disagreeing as to the outcome of the case, which was a good-sized fibroid in the lower segment and the head unable to engage. The oldest man in the conference, a man of wide experience, Schauta, of Vienna, disagreed with all of his consultants, and said that the fibroid would retract and the baby would be born normally, which did happen.

Dr. Findlay, whom Dr. Coventry has quoted as saying "once a Cesarean always a Cesarean" is not a good dictum, started out with the idea, when he began to make his investigations and to examine the literature, of finding out how many scars had ruptured. He started out with the conviction that once a Cesarean always a Cesarean section, was true, but in examining the literature he became very firmly convinced of the opposite, as I heard him say two weeks ago in discussing a paper in which a man had advocated "once a Cesarean always a Cesarean," that he found only 4 per cent of the scars had been reported as having ruptured, so that is hardly a good indication; and yet we hear of that so much that I want to emphasize the point Dr. Coventry brought out.

I desire to mention outlet contraction as an indication for Cesarean section. There has been a distinct increase in diagnostic ability through careful measuring of the pelvis in late years. More men are measuring the pelvis to take care of these cases, but there is neglect in measuring the outlet. I will illustrate this by the citation of one case. I saw a woman last year who had had five pregnancies, with four dead babies, one of them having been a miscarriage. In measuring her outlet I found she had an absolute outlet contraction. Measurement of the outlet should not be neglected. Dr. Williams, of Johns Hopkins, has drawn attention to this more than any other man, saying that the measurement of the outlet is quite as important as the measurement of the rest of the pelvis. I am a great believer in using simple methods if they are at all reliable, because, if we advocate the use of an outlet pelvimeter, it is quite likely not many men will employ it, but if, roughly speaking, one can get the measurements of his fist folded in this manner (indicating), he can fairly well estimate the pelvis. He can measure the outlet of the pelvis with his own fist by measuring between the two tuberosities. During the examination it is easy to do this, if he finds there is contraction, with his fist. He can then make instrumental measurements.

I hardly know what to say about Cesarean section in cases of eclampsia except this: I do not say that Cesarean section is not justifiable in cases of eclampsia, but the method that gives the worst statistics in the treatment of eclampsia is Cesarean section. I think a good deal of the epidemic of Cesarean section was due to the fact that it was recommended in certain cases of placenta previa, and that all poor women who had placenta previa had to submit to Cesarean section, whether simple placenta previa or not.

Dr. Coventry has brought out the point that central placenta previa may be an indication for Cesarean sec-

tion, but not necessarily so. I cannot quite agree with Dr. Coventry on the point that Braxton Hicks' version gives the baby a good chance for life. When we perform Braxton Hicks' version we are apt to have a very large fetal death rate.

I think the keynote of Dr. Coventry's paper, and one which I wish to commend for your consideration, is, that what is needed is better diagnostic ability. In other words, Cesarean section should not be done unless a man is capable of making an obstetric diagnosis in a given case.

DR. F. L. ADAIR (Minneapolis): I would like to say a few words relative to the indications for Cesarean section. After hearing Dr. Coventry's paper and the general principles which he so well outlined, I think I can best emphasize what I have to say relative to indications by citing a few cases which have occurred in my limited obstetrical experience.

The series which I have had comprises nine cases, one a vaginal Cesarean section, and eight transperitoneal or classical Cesarean sections. The vaginal Cesarean section was done in a case of puerperal eclampsia in a woman with an undilated and incompletely obliterated cervix. She was not at term, but was at the seventh month of gestation. The mother recovered from the operation and the eclampsia, but the child died a few minutes after delivery.

In another case in which the operation was done for an entirely different indication, ventrosuspension of the uterus had been performed and a marsupium had resulted in the uterus so that the lower extremities were caught over a bridge of tissue, rendering it impossible to deliver by forceps or to do version, so we resorted to Cesarean section, for it was impossible to extract the child through the vagina without embryotomy. Both mother and child lived.

My third case was one of eclampsia in a primipara at term. She was in the convulsive stage with an undilated cervix, though it was partially effaced. She had a tremendous edema of the external genitalia, and it was deemed advisable to do Cesarean section. Both mother and child did well.

My fourth case was one of eclampsia with a deformed pelvis which had resulted from infantile paralysis in early childhood. There was contraction of the outlet and an oblique pelvis. The patient was also a primipara, and it was problematical whether or not the child could be delivered through the pelvis. A Cesarean section gave a good result for both mother and child.

My fifth case was one of eclampsia in an elderly primipara, who had small fibroids of the uterus. The cervix was partially effaced and not dilated. She had been married for a long time, had been sterile, and this was her first pregnancy. She was desirous of having a child. It was deemed advisable to do Cesarean section; and both mother and child did well.

My sixth case was one of placenta previa with central implantation in a primipara almost at term. A Cesarean section was done with a good outcome for both mother and child.

In my seventh case the patient had gone practically a month over time. She had been in labor for a considerable time, and there was non-engagement of the head, the position being occipitoposterior. On account of the size of the child, the unfavorable position, and the prolonged labor without engagement of the head,

a Cesarean section was done. The child was delivered alive, but died a few days later. It was badly asphyxiated when born, and that was a factor in the death of the child.

In another case there was a contracted pelvis. The patient had had one child, which was delivered by version stillborn. This patient also was anxious to have a child. While it was a relative indication, it was deemed inadvisable to attempt a second delivery. She was, however, given the test of labor, and the head did not engage. A Cesarean section was done with a good result for both mother and child.

In another case the pelvis was apparently normal, but the woman had had large children. She had long labors in three instances and had been delivered each time by forceps with dead children. She was delivered of a fourth child by Cesarean section, and both mother and child did well.

The main reason I think for increasing the relative indications for Cesarean section is the fact that we can do it with greater safety to the mother, and are thus justified in giving relatively greater weight to the life of the child. What complicates obstetrical problems so much is that we have not only one life to consider but two, and it is difficult to determine how much weight to give to one and how much to the other.

DR. ARCHIBALD MACLAREN (St. Paul): As regards obstruction to labor by an impacted fibroid in the pelvis, I wish to say that our experience shows that sometimes the fibroid will rise out of the pelvis, as Dr. Litzenberg has suggested. When there is a fibroid in the posterior lip of the cervix so low down that it cannot rise in this way and large enough to prove an obstruction to labor, when seen at full term, one may safely enucleate the fibroid and pack the cavity with gauze; the presenting head then will act as a tampon to control hemorrhage. One such patient I remember was delivered of twins by Drs. H. and Asa Johnson, after such an operation.

I have had one experience with Cesarean section in the presence of a hard tumor in the true pelvis. This tumor was formed by the ligation of the internal iliac for aneurysm. This aneurysm had followed immediately upon a very difficult forceps delivery. Ligating the internal iliac produced a tumor about the size and hardness of the adult fist. When the woman became pregnant the second time, about three years after her first pregnancy, she was allowed to go to full term, and then was successfully delivered by Cesarean section.

DR. F. J. PLONDKE (St. Paul): Considerable has been said with reference to fibroids obstructing labor. I was called in consultation with a doctor to see a woman in labor; and on examination he discovered what he thought was two or three fibroids. These fibroids were somewhat large. He asked me to see the case with him, and I confirmed his diagnosis. We found three distinct fibroids, one posterior to the uterus and one on either side. I advised Cesarean section, and he thought it was the proper thing to do. He ordered an ambulance to have the woman taken to St. Joseph's Hospital. It happened that the ambulance driver was intoxicated, his horses became unmanageable and got

away from him. There was a hole in the sidewalk, into which one wheel of the ambulance went, producing considerable shock. The woman gave a cry and said to the interne, who was within hailing distance, "Doctor, it is coming." As he had to drive, he paid no attention to what she had said, and her baby was born while she was on the way to the hospital.

I relate this case to bear out what Dr. MacLaren has said, and what Dr. Coventry mentioned in his paper, namely, that these fibroids will sometimes move out of the way so that the baby can be born.

I agree heartily with Dr. Coventry and Dr. Litzenberg in everything they have said. My experience with Cesarean section has been limited, but more Cesarean sections should be done, provided they are done by competent men. Too many are done by incompetent men. Dr. Litzenberg also said that in looking back over our cases there are many in which Cesarean section should have been done, but was not done. I do not do any obstetrical work except in bad cases. In times gone by I did a considerable amount of such work, and, as I look back, I find there are many cases that I am convinced now should have had Cesarean section. If this operation had been done the babies would have been alive.

Only recently there was brought to me a woman who had been in labor for three days. She had normal measurements apparently, but we gave her some pituitrin and allowed her to work for some time; and in five hours, there being no engagement of the head, we applied high forceps, and both my assistants and I worked for an hour and a half and could not engage the head. We did a version and finally delivered a dead child, with considerable laceration. I believe, following out Dr. Coventry's idea, that if this woman had been delivered by extraperitoneal Cesarean section the child would have lived.

I did not fully get Dr. Coventry's suggestion as to the use of high forceps. I understood him to say that high forceps was indicated in cases in which Cesarean section was indicated. If he said that, I do not agree with him because in many of these cases high forceps, properly applied, will save the lives of both mother and child without Cesarean section.

Last week I was operating, and a nurse came running in and said, "Doctor, come quick." I got there as quick as I could, and found a woman on the table dead. The doctor who was in attendance and who had brought her in said that she had puerperal eclampsia; that she had had convulsions every five or six hours, and in putting the woman on the table she died. He suggested that it might be possible to do Cesarean section. I did it and delivered the child. The woman, however, had been dead about ten minutes.

In eclampsia I prefer vaginal Cesarean section to the abdominal because I think there is less shock with it, and a woman can withstand the shock of vaginal Cesarean section better than that which accompanies the abdominal.

Dr. Coventry brought out the main facts in connection with this subject, and those he did bring out were good ones; and if one follows all of the points he has brought out, he will not go far astray.

TECHNIC ON TONSILLECTOMY*

By JUSTUS MATTHEWS, M. D.

Mayo Clinic

ROCHESTER, MINNESOTA

After trying various methods of preparation, operation, and after-treatment in the removal of tonsils, I have selected the technic described herewith, as it was the most uniformly adapted to all the requirements of the local and general conditions met with in more than 12,000 operations on the tonsils.

No special preparation, such as dieting, cathartics, or medication, is carried out, since patients withstand the local anesthetic better if they are in a normal condition and have food in the stomach.

The tonsils and fossæ are brushed with 10 per cent cocain on a cotton applicator rolled rather firm and dry so that excess of cocain does not escape into the throat. The same application is repeated in five minutes, and, after a like interval, the injection is started. About 5 drams of a solution of cocain, $\frac{1}{10}$ of 1 per cent, with 1 minim of adrenalin, 1 to 1,000, are injected. A dram-syringe with extension barrel and curved needle is used. The needle should be large and not too sharp so that the exact location of its point may be more accurately estimated by the resistance of the tissues, and the danger of injecting the larger blood-vessels of the region reduced to a minimum. The first series of punctures are made about the edge of the capsule rather superficially into tissues more or less anesthetized by the cocain applications. Then two or more injections are made by passing the needle through the body and capsule of the tonsil into the fascia of the deeper parts of the tonsil fossa. The operation is begun after two or three minutes. The tongue is depressed until the edge of the palatoglossus muscle stands out distinctly. No other fixation of the tissues is employed.

The end of the Robertson knife is placed behind the point at which the palatoglossus joins the base of the tongue, and is carried upward along the edge of the muscle, following its fibers accurately. In passing over the tonsil a downward pull with the flat side of the knife is given to free the upper pole somewhat from its bed in the soft palate. Then the knife is carried down along the posterior pillar, care being taken to avoid cutting so deeply as to split the muscle or encounter the fascial vessels. The upper pole of

the tonsil is then grasped with the Richards forceps, and drawn downward into the pharynx, while the adhering muscle and fascia are pushed away with the convex flat surface of the knife. This separation is carried down beyond the insertion of the superior constrictor muscle until only membrane and lymphoid tissue remain to be cut, when the snare is used to complete the operation. The operation may be done entirely with the knife, but in our experience the finish with the snare leaves the surface more smooth and less liable to bleed.

The indications for operation and the symptomatic results following operations on the tonsils have been tabulated from 1,000 consecutive cases in the Mayo Clinic. Local conditions were entirely satisfactory in slightly more than 88 per cent of the cases. Slight local symptoms persisted in 8 per cent and no change was reported in 3 per cent of the cases. In practically all of the cases we have had an opportunity to re-examine it has been found that the failure to obtain relief was due rarely to faulty operation, but usually to failure to distinguish between sore throat caused by tonsillitis from that caused by pharyngitis or other regional inflammations. Care is now taken to ascertain that complaints of sore throat have been caused by actual tonsillitis, and when there is any considerable inflammation elsewhere in the region it is treated or the patient is advised to take treatment subsequently.

In 60 cases of cervical adenitis, removal of the tonsils was followed by no improvement in 11 cases (18 per cent), and by marked improvement or total recovery in 82 per cent. In 2 of the former and 6 of the latter the affected glands were excised. In 300 cases of all classes of rheumatoid affections 75 per cent of the patients were markedly improved or cured. The various types responded quite differently, ranging from arthritis, 75 per cent, to destructive arthritis and arthritis deformans, 25 per cent. Many of these patients had other treatments, including removal of other possible focal infections, so that the results are not entirely those of tonsillectomy.

Asthma in childhood was completely relieved in 4 of 7 cases, the other 3 being little, if any, influenced. Almost invariably the latter can be relieved promptly by nasal treatments which pro-

* Presented before the Ontario Medical Association, Toronto, Canada, June 1, 1916.

note drainage of the nasal accessory sinuses. A tendency to chronic or recurring cough was relieved in 12 of 16 cases, and croup was cured in 3 of 5; a fourth being markedly improved. Six of 8 patients with secondary anemia for which no other cause could be found became normal promptly after tonsillectomy. These had also tonics, to which they responded much more markedly after tonsillectomy.

Three of four patients with chorea recovered within a year after operation. Of 9 epileptic patients 1 had remained well for one year, 4 were much better as to frequency or severity of attacks, and 4 were no better.

The number of patients relieved of gastric trouble was especially conspicuous; 29 of 33 were entirely cured. The conditions included cyclic vomiting of children, and various other functional disturbances in children and adults.

There was no severe primary hemorrhage in the series. Thirty and six-tenths per cent had some degree of hemorrhage during the first twenty-four hours. Less than half of these hemorrhages were of sufficient consequence to demand the attention of a physician, and none was very severe. Six occurred during the first hour, 4 during the second, 11 during the third, 12 during the fourth, 1 during the fifth, and 2 between the fifth and the twenty-fourth hour. In practically every case requiring attention the fossa was cleared of clot, and a hemostat was placed on the bleeding vessel so as to control the hemorrhage completely within a few moments after we saw the patient.

Late secondary hemorrhage occurred in 34 cases: 4 the second day, 2 the third, 3 the fourth, 6 the fifth, 8 the sixth, and 10 after the sixth or not stated. Most of these were trivial results of bleeding granulation tissue, but three patients had the attention of a physician, and one of these bled severely. The latter were all patients with hyperthyroidism.

The voices of 219 patients were reported better after operation than before, 15 patients mentioning particularly that the singing voice was improved. Forty-six reported their voices as worse after operation, 5 of whom said their singing voice was not so good. All of these that have been seen were complaining of chronic pharyngitis and laryngitis, which existed before operation and persisted in spite of it. In my opinion proper operation can do no damage to the voice, though serious harm may result from destruction of the muscles of the palate and pillars or from the cutting of the branches of the glossopharyngeal nerve, which are sometimes in contact with the capsule.

This report gives merely the symptomatic conditions after tonsillectomy. In many cases other treatments obtained or helped to obtain these results, and in many cases the failure to obtain results was undoubtedly due to lack of other treatment. However, the series of cases is sufficiently large to indicate in some measure what average result we may expect in various types of cases and may be of value in furnishing a basis for prognosis.

THE DIAGNOSIS OF GASTRODUODENAL LESIONS*

By JOHN M. LAJOIE, M. D.

MINNEAPOLIS

In the correct diagnosis of lesions of the stomach and duodenum, the most important single method available at the present time is a carefully taken, skilfully interpreted history. This should be followed by extensive clinical observations, and, finally, and very important, is an intelligent röntgenologic examination. In their enthusiasm to follow up the latest laboratory test, physicians have relied too much on laboratory methods, and to a corresponding degree have neglected the history, clinical symptoms, and general inspection of the patient. One should take

a broad view of the subject and obtain evidence from every possible source, and then make a diagnosis from all the facts on hand.

In gastric and duodenal ulcer chronicity and remission of symptoms is an important factor, occurring in the large majority of cases. Factors influencing recurrences are intestinal disturbances, indiscretions in diet, infection, worry, fatigue, and exposure. Between attacks complete relief from symptoms is the rule. During periods of attack pain or distress is variable in intensity and is commonly a constant symptom. Abdominal pain may be produced by contraction of the walls of a hollow viscus or by inflamma-

*Read before the Stearns-Benton County Medical Society at St. Cloud, on November 16, 1916.

tion plus muscular spasm. We may have three types: (1) severe and rhythmic, as in renal, gall-duct, or intestinal colic; (2) severe and constant, as in perforation of stomach; and (3) less severe and more or less constant, as in a subacute perforation, appendicitis, or peritonitis. Since the stomach and duodenum are organs rarely obstructed acutely, severe pain rarely occurs except in perforation, and it is then constant and accompanied by tenderness and muscular rigidity. Then, pain severe and colicky is outside the stomach and duodenum. Pain immediately after eating, especially if with vomiting, is apt to mean a severe contraction of the stomach due to some extrinsic cause. Pain occurring with periodic regularity between meals, relieved by food, suggests some lesion of stomach or duodenum. Constant pain not affected by taking food, may or may not be due to disease in the stomach. Of secondary importance are location, type, and radiation of pain.

Nausea may be present, but never the prolonged continuous nausea of gall-bladder disease or pregnancy.

DUODENAL ULCER

The clinical differentiation between gastric and duodenal ulcer is very difficult. They occur together in about 15 per cent of the cases. Here the x-ray is of great value, but, valuable as it is, it has its limitations. Ulcers of the duodenum, pylorus, and pyloric end of the stomach produce the same symptoms, and from the standpoint of the diagnostician should be considered together.

In duodenal ulcer, pain or distress usually occurs when the stomach is empty from one to three hours after meals, and is relieved by diluting the gastric contents with food or water and with alkalis, and is made worse by exertion and relieved by lying down. Pain stays in the upper abdomen. Graham says "the longer the period between food intake and onset of symptoms, the lower the ulcer as a rule." Usually the appetite is good. The symptoms have a remarkable periodicity, and from day to day are very similar. As the disease progresses there is distress in the early hours of the morning, keeping the patient awake, and is relieved by taking milk or other food.

There is usually no vomiting, but there may be acid regurgitation; however, in the later stages of the disease when there is obstruction vomiting does occur, the pain is more constant, and there is less ease from food and soda.

Bleeding occurs in about one-third of the cases, accompanied only occasionally by pain, but fre-

quently with weakness and prostration with the altered blood-picture of secondary anemia depending on the amount of blood lost. The analysis of the gastric contents shows high acidity as a rule.

GASTRIC ULCER

The symptoms of gastric ulcer are less definite than those of duodenal ulcer. The pain of gastric ulcer is of the same character, but more irregular. It is apt to be more constant than in duodenal ulcer and not so likely to be relieved by food, and has not the same periodicity. The acidity is usually high, and vomiting is more frequent and gives relief.

Blood in the gastric contents, in the absence of evidence of a gross motor disturbance, with pain and tenderness in the median line, suggests gastric ulcer. In high ulcer, pain is not often relieved by food, and the symptoms are more likely to be continuous rather than with intervals of complete relief. Hematemesis is the rule when bleeding occurs. Alkalies relieve when food does not. Pain begins earlier, usually one-half to two hours after meals, and is often gone before the next meal. Blood is found in the stool in about 25 per cent of ulcer cases.

Perforating ulcers of the stomach or duodenum will have the same symptoms plus severe pain, tenderness, and muscular rigidity.

The organic diseases that must be differentiated are chronic cholecystitis, chronic cholelithiasis, and chronic appendicitis. They have no regularity of symptoms during periods of attack, especially regarding time and appearance of pain and influence of food. Ulcer is simulated most by chronic catarrhal cholecystitis. These are the cases that require daily observation with repeated laboratory examinations. The test-meal analysis is very essential. Its findings are of value only when backed up by a good history, for low acidity is found in a large percentage of ulcers, while high acidity is frequently associated with functional states and extra gastroduodenal lesions.

Mucus is a protectant, and its excess means some irritation which nature is attempting to overcome.

GASTRIC CANCER

If a patient aged forty or more years complains of gastric disturbance, we should suspect gastric cancer. It does occur in patients much younger, but not as a rule. A persistent gastric ulcer should be suspected of containing cancer cells. Unfortunately, there is as yet no method

of making a very early clinical diagnosis of gastric cancer. One reason for this is, that early cancer, which involves the body of the stomach and is not ulcerated, may grow to considerable size without producing symptoms. However, hope lies in an early diagnosis and operation. Where cancer of the lesser curvature and pylorus has advanced to a stage where symptoms are produced, there is constant gastric distress, associated with loss of appetite, and loss of strength and weight, which does not occur with simple ulcer. This symptom complex plus low acidity of gastric contents should make us very suspicious of cancer. Pain is one of the most constant symptoms, is less definitely localized than in ulcer, worse two to four hours after meals, and is not relieved much by vomiting. There is emaciation in advanced cases, associated with a secondary anemia. If there is obstruction at the pylorus, the vomitus several hours after diet will contain particles of undigested food, yeast cells, *sarcinæ*, and Boas-Oppler bacilli. If there is bleeding the vomitus will be coffee-ground in appearance. After a test-meal free hydrochloric acid is absent as a rule, and lactic acid is frequently present.

Cancer of the stomach can be diagnosed extremely early by the Röntgen ray. I am convinced that it can be diagnosed earlier by an intelligent röntgenologic examination than by any other means. Such an examination is of the greatest value in determining the operability of cancer of the stomach.

ROENTGENOLOGIC SIGNS OF GASTRODUODENAL LESIONS

GASTRIC CANCER

In stomach and duodenal work four diagnoses may be made:

1. Ulcer.
2. Cancer.
3. A lesion.
4. Indeterminate.

By *ulcer* and *cancer* we mean that one of them is present.

By a *lesion* we mean that either an ulcer or a cancer is present, but from x-ray signs alone it is impossible to say which one. The clinical history may help here or a stained section after operation will make the proper diagnosis.

By *indeterminate* we mean that from the x-ray signs alone it is not possible to make a negative or positive diagnosis.

What follows herein on gastric cancer, gastric ulcer, and duodenal ulcer is based, first, on the

experiences of Dr. Carmen, of the Mayo Clinic, on the examination of several thousand cases, and, secondly, on my own personal observation of 500 stomach examinations, under Dr. Carmen's direction. Of these, about 20 per cent had positive findings, more than half of which were checked up at operation. About 70 per cent of the patients were males. The most common lesion was duodenal ulcer, occurring in 62 patients. Cancer of the stomach was next in order, occurring in 20 patients. Ulcer of the stomach occurred in 12 patients. There were 4 diagnosed as a "lesion of the stomach," and 2 were indeterminate. One diverticulum of the duodenum was seen. Double lesions, namely, gastric and duodenal ulcer, occur together in 15 per cent of ulcer cases. Cancer of the duodenum occurs exceedingly seldom, probably once or twice in a surgeon's life. About 15 per cent of gastric or duodenal ulcers give no röntgenologic signs.

In the Mayo Clinic 95 per cent of gastric cancers have distinct röntgenologic signs; and Graham says that 95 per cent of the tumors of the stomach are cancer.

Röntgenologic manifestations of gastric cancer are departures from the normal contour, pyloric action, peristalsis, motility, flexibility, mobility, position, and size of the stomach.

Filling defects are localized subtractions from the barium shadow, and are found in cancer, syphilis, benign tumors, and adhesions. Tests of genuineness of a filling defect are its persistence under all conditions during the screen examination, its constancy upon all plates, and its resistance to antispasmodics.

Filling defects are basic signs of cancer. The true filling defect is permanent, and absence of peristalsis is confirmatory. Filling defects from other causes, such as extrinsic tumor and spasm, must be ruled out. Spasm that resists palpation should be investigated. If organic, it is permanent even after anti-spasmodics. With cancer the filling defect is into the stomach. There are an irregular outline and a stiff wall. Peristalsis, if absent in a local area, is a valuable sign. Cancer produces more or less fixation of the stomach, and there is lessened flexibility.

Pyloric obstruction is found in over 50 per cent of gastric cancers. Alteration of pyloric function, either by gaping or obstruction, is common. If gaping, there is a free and continuous flow of the barium meal. Free and continual flow may also be found in duodenal ulcer, gall-bladder disease, and achylia, but the flow is not

so great. Persistent local spasm of the greater curvature may mean cancer or ulcer of the lesser curvature. In cancer, as well as in ulcer, spasm, or benign lesions, there is frequently marked diminution of capacity. The cancerous stomach empties either slowly or quickly, depending on obstruction or gaping or achylia. The six-hour meal is in the cecum normally. If the stomach is not empty at the end of six hours it usually means obstruction at the pylorus, organic or spastic. Six-hour residue with achylia plus alterations of gastric contour means cancer obstructing the pylorus, or the obstruction of the duodenum by pericholecystic adhesions.

The hour-glass of cancer has usually a long, centrally placed, irregular canal joining the two loculi.

Ulcers are found occasionally showing cancer cells. In the gross they resemble benign ulcers. Usually the Röntgen rays show a very large crater in carcinomatous ulcers. The leather-bottle stomach is looked upon by many pathologists as malignant. Its röntgenologic findings are practically identical with cancer, and therefore nothing more than its mention may be considered here.

The hour-glass produced in a syphilitic stomach usually is more spool-shaped than x-shaped.

There are various rare benign tumors of the stomach that cannot be distinguished röntgenologically from cancer. They are myomata, fibromata, adenopapilloma, cysts, and neoplastic tuberculosis.

GASTRIC ULCER

Ninety per cent of ulcers of the stomach give röntgenologic signs.

Four classes of ulcers are seen at operation: (1) the small shallow mucous erosion or slit, which is difficult to diagnose if it has no secondary phenomena; (2) penetrating or callous ulcers with deep craters; (3) perforating ulcers; (4) carcinomatous ulcers.

A penetrating ulcer shows a crater or niche. A perforating ulcer shows an accessory pocket. The niche and accessory pocket are the two primary signs of ulcer, and are practically pathognomic. The niche is a local dissolution in continuity of the mucosa and underlying muscle layers, commonest on the lesser curvature or posterior wall. It is best seen when the stomach is filling, and it resists manipulation. An accessory pocket is the same condition which has extended through the gastric wall so that a small cavity is formed outside of the stomach and is continuous with it. Accessory pockets are usually against the liver or pancreas.

The contributory or secondary signs of ulcer are less diagnostic, and are the following:

1. The incisura is the chief sign of ulcer. It is an indentation in the gastric wall opposite an ulcer and usually in the same plane, and is frequently seen accompanying a niche. It may, however, be caused by the scar of a healed ulcer. It must be differentiated from normal incisura, these resulting from adhesive bands, and spasmodic incisura from extrinsic causes, such as disease of the appendix or gall-bladder, or the incisura of duodenal ulcer which resists antispasmodics. A true incisura must be constant and stationary. It must be present when the stomach hangs in its natural position, must survive manipulation, and must persist after antispasmodics to physiologic effect.

2. Spasmodic hour-glass, which is an excessive incisura. The chambers are joined by a short canal, making the stomach B-shaped.

3. A diffuse spasm usually affects the pylorus in gastric ulcer; it is constant and withstands massage.

4. Organic hour-glass occasionally follows perforating or penetrating ulcers.

5. Residue,—an eighth or more of the six-hour meal is common with gastric ulcer.

DUODENAL ULCER

Ninety per cent of duodenal ulcers occur in the first inch and one-half of the duodenum, usually on the anterior wall. An ulcer may be so small as to be overlooked by the surgeon, but by rubbing the mucosa with gauze, petechiae will be produced in the ulcer area.

The duodenal bulb is seen after giving the bariumized solution. With the screen in most cases a definitely normal or a definitely deformed cap will be seen, or the secondary gastric signs will affirm the diagnosis. In all doubtful cases platting is required, using the recumbent position.

The direct sign is deformity of the duodenal bulb:

- a. General distortion giving the cap a branched appearance practically always means duodenal ulcer.

- b. Deformity of the base.

- c. A niche seen in the cap-shadow.

- d. The presence of an incisura.

- e. Where the shadow represents a small fleck of barium, due to stenosis.

- f. Accessory pocket.

- g. Diverticulum with stenosis.

The significance of deformity depends, not on the size, but on its constancy.

The indirect signs are alterations of gastric

tone, peristalsis and motility, gastrospasm, and a localized tender point. The three hypers (hyper-tonus, hyperperistalsis, and hypermotility) are strongly indicative of duodenal ulcer. Hyperperistalsis is a regular succession of three or more waves seen on both curvatures. Obstructing pyloric and prepyloric lesions are sometimes associated with hyperperistalsis, but the waves are usually disorderly in character as to depth and sequence, and the greater curvature is chiefly affected.

Hyperperistalsis is seen in 60 per cent of duodenal ulcers. It occurs also in lesions of the gall-bladder and appendix or in the hypotonic steer-horn stomach, but less pronounced. It requires no stimulus, and is more lively in the recumbent position.

The meal passes the duodenum quickly or slowly, depending on stenosis. Twenty-five per cent of duodenal ulcers are obstructive, leaving a gastric residue.

If gastric cancer, achylia, and the diarrheas can be excluded, hypermotility strongly suggests the possibility of non-obstructing duodenal ulcer.

A six-hour gastric residue without evidence of gastric ulcer or cancer should suggest duodenal obstruction, the most common cause of which is duodenal ulcer. If, in addition to gastric retention, there is a typical gastric hyperperistalsis, the presence of a duodenal ulcer is well-nigh certain. Dilatation of the antrum, a late manifestation of obstruction in the vicinity of the pylorus, should arouse suspicion of obstructive duodenal ulcer. Hyperperistalsis of itself does not mean duodenal ulcer. There must be some other sign with it.

Gastrospasm is frequently found with duodenal ulcer. Spasm is rarely or never of the total or regional type, is commonly incisura or hour-glass, and usually travels toward the pylorus with peristaltic waves. It may persist after belladonna.

Duodenal ulcer may cause the hour-glass stomach or gastric incisura, which will not respond to atropin. However, this may be due to a double lesion in the duodenum and stomach, which occurs in 15 per cent of the cases.

The value of indirect signs depends considerably on their frankness. Hyperperistalsis associated with gastric retention and a normal gastric outline is safely diagnostic of duodenal ulcer. Hyperperistalsis alone is worth 60 per cent, and backed by a good clinical history it is worth more; but one should make a serial plate examination or re-ray.

No diagnosis can be too strongly fortified. Do

not pin exclusive faith to a single method of Röntgen examination.

Foss says "75 per cent of the errors in abdominal diagnosis have to do with disease of the duodenum, gall-bladder, or appendix, one of which is mistaken for the other." Recently, fluoroscopic examinations combined with serial plate investigation have increased the degree of diagnostic accuracy by means of the x-ray to 80 per cent for duodenal ulcer, 90 per cent for gastric ulcer, and 95 per cent for gastric cancer. Renal or urethral stones may produce gastrointestinal symptoms. These the x-ray showed in 89 per cent of Braasch's cases.

Interpretation of findings: The röntgenologist has to deal with shadows and shadow defects as signs. He is tempted to see too much rather than too little. One's attention is attracted during examination to many little and strange things which mean nothing whatever. Familiarity makes direct signs of lesions manifest at once or not at all. Prolonged examinations dull the sense of proportion, making one interpret findings incorrectly. Checks against error should always be employed where there is any doubt. The two best are re-examination and the administration of an antispasmodic, such as belladonna. Occasionally one comes across exceptions, but it is always safer to regard exceptions with doubt. W. J. Mayo says that only one in ten persons with gastric symptoms has gastric lesions; and therefore one is bound to examine a good many negative stomachs, and, besides, there are many lesions outside of the stomach that give gastric symptoms. These extrinsic lesions are aneurysm, pleural, pulmonary, mediastinal and cardiac diseases, diaphragmatic hernia and eventration, sub-diaphragmatic abscess, gall-stones, renal, urethral, and vesical stones, enlargements and tumors of the kidney, liver, spleen, and pancreas, and vertebral disease.

It is best for the clinician to work with the röntgenologist. I wish to discourage the impression that röntgenologic work is simple; it is not. There are less than fifty men doing first-class work in this country. If one would do good work he must have had considerable experience and must limit his work to röntgenology. Teamwork of the internist and röntgenologist is the ideal arrangement, for the internist may suggest to the röntgenologist certain things to which he wishes special attention given, and he gets a more definite impression of the screen picture, and is in a better position to give proper values to all the facts on hand in making the final diagnosis.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

MARCH 15, 1917

THE MINNESOTA FEE-SPLITTING BILL

There seems to have developed a stronger feeling in regard to the bill introduced recently in the Legislature of Minnesota, and the information that comes to THE JOURNAL-LANCET would indicate that the editor's remarks at the recent meeting of the Hennepin County Medical Association, that fee-splitting is on the decline, is not upheld, and, judging from the various sources of information, there is a great deal of fee-splitting going on in a very quiet manner, hence a bill to prevent this vicious system would at least be educational if not preventive. Already Alabama, Kansas, Ohio, Iowa, Wisconsin and Kentucky have bills on the statutes which prevent the "selling of patients," and they are said to have worked out very well as far as they have been tried. Surgeons are constantly complaining of the split-fee soliciting doctor; and he is no less obnoxious whether he comes from distant parts of the country or from one's immediate vicinity. Sometimes his demands are modest; sometimes they are excessive; and it is not uncommon that the offending surgeon who performs the operation for the fee-splitting doctor remits the latter 50 per cent of the fee. Not only this, but in some instances the doctor from the country accompanies the patient, with perhaps other mem-

bers of the family; and the doctor is paid a reasonable fee and his expenses. The home doctor simply watches the operation. His patient pays the surgeon, and, after the doctor has returned to his home, the surgeon sends him 50 per cent of the fee he received, so that, in a case of this kind, the accompanying physician gets more than a 50 per cent split.

A surgeon testified a short time ago that he operated on a man and his wife in a town in a neighboring state, and that they were both very much pleased with the work done, the wife saying she would like to refer her friends to him for surgery; but she said she was prevented from doing so by the minister's wife, who made a practice of going around to see the sick, and she intimated without hesitancy that she did so because she received a commission from the surgeon who performed operations upon patients sent by her. This is carrying fee-splitting to an extraordinary limit. This might be explained, however, on the ground that surgeons not infrequently operate on ministers or their families free of charge, and they expect in return that the ministers and their wives will return the compliment by sending them all the business they can drum up. Not infrequently, too, and perhaps without the knowledge of the surgeon, the minister who is operated on feels very kindly towards the surgeon, and he publishes in his town paper the details of his operation and the name of the surgeon who operated on him. The circulation of the paper is in the immediate neighborhood at least, or perhaps it may cover a larger territory, all of which is greatly to the benefit of the operating surgeon.

These things, of course, cannot always be stopped. They are incidents and expressions of good-will on the part of the minister; and the surgeon may have no knowledge that such a letter or news item is to be published. On the other hand, it is quite fair to assume that a good many surgeons know that letters will be written and some of them are endeavoring to suppress their names in connection with an operation performed on a country patient, and particularly on a country minister. They are doing this in justice to themselves and to their confrères; and this is the only proper course that they can pursue. Consequently, when an article appears in a paper, particularly in a country paper, it must not be assumed that the operating surgeon is responsible for its introduction. This does not take away the sting of the fee-splitting business.

If a surgeon is honorable and honest in his work he will make every endeavor to prevent any such agreement between surgeons and doctors, and the only way that he can stop the practice is to abstain from fee-splitting at all.

If all surgeons had this high-minded attitude, fee-splitting would disappear; but the temptation is very great, especially for the surgeon who is starting out in business, and is not well equipped to perform surgical operations, and so feels obliged to pay for business.

Whether the bill which is now in the Legislature will ever come out of committee or be passed by the legislative body is speculative; and whether it would accomplish its aims is still further speculative. However, it will do something in the way of education, and may open the eyes of some of the men who have practiced this unfortunate method of "selling patients," and "robbing patients," by splitting fees when honesty and good purposes would be much more remunerative in the end.

NEW LEGISLATIVE BILLS IN MINNESOTA

The introduction in the Legislature of a bill to terminate the Mayo Affiliation with the University startled the medical men of the state last week, and has provoked a good deal of discussion, comment, and much feeling. Whether it will get through the House and Senate is a question, but it has been championed by several members of both bodies, and it may possibly be passed if it gets out of committee and is not killed by the deluge of bills already before that body, on account of the fact that the Senate remains the same as it was two years ago when this bill came up for discussion. The promoters of the bill claim that nothing has been gained so far by the Affiliation and that the Graduate School of Medicine has consisted so far of but one student, and that no actual benefits have come to the University through the Mayo Clinic.

The medical man sees these problems from a medical point of view, while the layman looks at them from a purely lay point of view and believes it is simply a "scrap" among doctors. Consequently, it is difficult to say how much real information may be imparted by a discussion of a bill of this kind. That the Medical School is in a somewhat uncertain state is suggested by the frequent complaints which come from physicians, from the faculty, and from the

student body. It is pretty generally conceded that things are not harmonious in the School, and consequently any effort to revive fights of previous years will be accompanied and followed by bitter feeling on both sides.

No other new bills have been introduced relative to medical matters than those commented on in a previous editorial, except that the meat-inspection bill has been remodeled, and if it goes through will be a very important measure.

One of the greatest difficulties the legislators have to contend with this year is the enormous number of bills that have flooded both House and Senate; and to both the lay and the professional mind it seems almost impossible that a large part of these bills can be thoroughly discussed and acted upon. To us outsiders, some of these bills seem to be rather puerile,—for instance, a bill that has just passed the Senate was a measure which permitted discharged soldiers to peddle without a license. It seems to us that such a measure does not deserve the attention of any legislative body. If time is consumed on such bills as this, what show has an important bill of getting before the Governor for his approval?

The State Board of Health is still meeting with more or less opposition, and the recent bill introduced by the Efficiency and Economy Commission for the re-organization of the Board has been modified, but is still unsatisfactory to public-health workers; and it is a bill which can be safely lost in the shuffle. That it is a bill launched against the executive officer of the State Board of Health is very plain, for, in the minds of some of the legislators, Dr. Bracken has become very unpopular. If he has so become it is because he enforces the laws, and he enforces them when it offends some of the legislators. It would seem almost as if the protection of the people of the state by a health body would be more important than the driving out of an efficient officer of the State Board of Health.

If THE JOURNAL-LANCET could publish all the letters that have come to its office commending the State Board of Health, they would form a strong argument for the continuance of the present plan of looking after the health of the people of Minnesota. Many of these letters come from health officers in various parts of the state, and they should carry a great deal of weight.

Again, we wish to urge our readers to take more interest in legislative matters which affect the medical profession and which affect the welfare of the health of the people of Minnesota.

Vol 37
3-15-17

DIGITALIS

Digitalis therapy has long been a subject of great interest to medical men, and their faith in the drug has never wavered, but in its use a feeling of uncertainty is always present, for the results are varied. The tendency of the profession has been to drift from the officinal preparations to the high-priced alkaloids and preparations of a similar character, which have apparently given less variable results.

Recent investigations by the Department of Medicine of the University of Minnesota have produced some new and important results, as follows:

1. Digitalis grown in Minnesota compares favorably with the best digitalis from any source.

2. Digitalis from any source whatever varies in strength (or toxicity), and, in order to obtain results, the relative strength must be determined. This is accomplished by a method of assaying or standardization; the strength (or toxicity) is determined and the dosage established in accordance with the determination, and the dose then given produces the constant desired results.

3. In order to secure results with digitalis, the drug must be pushed to a definite clinical point; then smaller doses will continue the desired effect.

4. Digitalis purpurea of the second-year growth is the officinal form of the drug, and has been used since it was brought forward by Withering, in 1886. The Minnesota digitalis is of the first-year growth.

5. A new species of the digitalis family, "digitalis lutea," has been found by the research laboratory of the Department of Medicine of the University of Minnesota, which has the same therapeutic action, but none of the irritating qualities, of digitalis purpurea. An exhaustive study is now being made of this newer form and definite results will soon be brought forward.

CORRESPONDENCE

TO THE EDITOR:

As a medical alumnus of the University of Minnesota, the enclosed circular, just received, seems to me of much importance, and truthfully sets forth the condition in the University. I therefore request that it be printed in THE JOURNAL-LANCET, in order that all interested in the matter may be correctly informed.

Respectfully,

GEO. K. HAGAMAN, M. D.

Anoka, Minn., March 11, 1917.

WHY THE MAYO AFFILIATION WITH THE UNIVERSITY SHOULD BE TERMINATED

The principle of merging public with private interests is wrong in theory and bad in practice. The affiliation grants to a private corporation special privileges. This corporation is an immense business concern engaged in money making and is attempting to make the State of Minnesota its agent to further these plans. Two years ago the State Senate expressed its condemnation of the proposed affiliation by a decisive vote. The time since then during which the affiliation has been in force has been sufficiently long to prove the accuracy of the arguments then voiced against it. The affiliation has failed to "fulfill a public duty" in the manner hoped for by the Executive Committee of the Board of Regents in its report to the Board under date of June 5th, 1915. The affiliation on the other hand has been detrimental and harmful to the University, to its Medical School, and to medical education in the State for the following reasons:

1. It has disorganized the Medical School so that it is no longer a self-governing, co-operative, successfully working unit. The faculty is no longer well organized. Its members distrust each other and democratic "home" rule no longer governs its activities. The discord is not caused by the faculty members who opposed the affiliation, for these are compelled by a resolution passed by the Board of Regents to support it. The discord is found in the Administrative Board and is largely due to the fact that as a body it has lost its autonomy; and an influence outside of and separate from the school is the directing authority.

2. The policy of the Medical School has become autocratic. Influences from without instead of the needs of the school within determine action. The members of the Administrative Board talk and act as if they were held by an arbitrary policy concerning which they were helpless, no matter what their own convictions and experiences have been concerning the best interests of the school.

3. Gag rule is now in force on the medical campus. Immediately after the adoption of the contract with the Mayo Foundation, the Regents found it necessary to adopt the following resolution—a direct blow to academic freedom:

"That the best interests of the University require that the new plans for developing the graduate medical work of the University should not hereafter be opposed by any member of the faculty of the medical school, but, on the other hand, should have the loyal support of all the members thereof."

This check upon the thought and action of medical teaching is affecting nearly every individual in the school. Members of the teaching staff are afraid to express their opinions on questions concerning the policy and development of the school even among their friends. As a result of this gag rule several valuable men have resigned from the faculty. As a result it is manifestly impossible for the Regents to secure the judgment of the medical teachers in the school concerning the working out of the affiliation. Alumni and

friends of the school outside of the faculty must therefore speak.

4. Graduate work for the medical profession in the State as formerly offered in the summer school for practicing physicians has been entirely abandoned at the University since the affiliation was established except as it is carried on in a limited number of teaching fellowships.

5. The affiliation has been the entering wedge that has divorced the University from the good-will and support of the medical profession at large and from the alumni. The University authorities admit this fact and contend that as a result they cannot get the support deserved from the legislature. The whole University Administration including the President, members of the Board of Regents and the Medical Dean, have been placed in a position of distrust as a result of this union. Many recent events prove this assertion, among which is the bill pending in the legislature seeking election of the Board of Regents by the people of the State. Members of the Administrative Board of the Medical School admit that any plan originating in the school is unpopular and meets opposition. This condition is not due to prejudice or ill will toward the University on the part of the opposition, but exists because since the affiliation was established democratic rule in the school has ceased and plans and policies which in the past have proven wise for the growth of the school have been abandoned without good or demonstrable cause.

The vote of the Medical Alumni at their last annual meeting was 63 to 5 against the plan of having full-time medical teachers receive pay for the care of private patients on the University campus. The house of delegates of the State Medical Association opposed the same measure last fall by a unanimous vote. It is a recognized fact that the success of a medical school supported by the State depends upon the good will of the medical profession in the State. Ninety per cent of the physicians of Minnesota are against the affiliation. The Medical School will never enjoy their support so long as the plan remains in force, because the neutrality of the Medical School as a State institution has become partisan and its prestige, power, resources, and scholastic honor have been linked with private interests. It is unthinkable that these men, constituting the most important and powerful body of professional men in the State, should be ninety per cent selfish and their motives in opposing the affiliation should be wholly unworthy. The medical profession of the State is opposed to the affiliation because they are capable of understanding its harmful influences upon the Medical School and medical education in the Northwest, both of which are objects of their pride and loyalty.

6. The affiliation has upset the established policy of the school which had been carefully and gradually developed in the past according to the needs of the school and the resources of the State. In its place are now offered further experiments in medical education untried and unsuitable to our environment, in an attempt to adjust the school to the new conditions arising from the affiliation. The recent plan for hospital extension proposed by a committee of the Medical School the important provisions of which are: (a) private pay patients supported by the State on the campus; (b) "per diem" patients in the University hospital; and (c) the attempt to juggle the funds received from patients in

such a way that certain faculty members will receive a salary twice as large as that paid to other professors of equal attainment and responsibilities, is a natural outgrowth of the disorganization, discontent and unrest present in the faculty since the affiliation.

7. The affiliation has placed too much emphasis upon research and graduate work at the expense of undergraduate work, which is the main duty of a State medical school and the chief reason for its existence. The student body has been a distinct loser by this fact, as the graduate work will be done at Rochester, beyond the immediate observation and reach of the undergraduate body.

8. The present arrangement, unless revoked, binds the State of Minnesota to maintain *for all time to come*, the work of the Foundation at Rochester. This is contrary to public policy. The dead hand may become a heavy hand and most unwholesome. The time may come, nay, is almost sure to come, when Rochester will mean no more medically than any other small town in the State. It is even conceivable that the Mayo private firm linked with hooks of steel to the Mayo Foundation and thus to the State Medical School may, by some legal technicality, become attached to a fake medical institution located at Rochester. After the trial period the Board of Regents have no control over the Mayo Clinic under the agreement.

While the present affiliation is for a trial period of six years it is appreciated by only a few that it becomes *automatically* permanent unless revoked by the Board of Regents or by the Mayos before September 1st, 1921.

9. The insincerity of the plan is well illustrated by the following facts: When the question was before the legislature two years ago and the Senate had a bill under consideration to make the affiliation unlawful, the Regents passed the following resolutions:

"Although the Board of Regents has not as yet officially considered a proposed affiliation with the Mayo Foundation, in order to make clear the policy of the Board, be it voted: First, that in any event, the Regents do not enter into any permanent arrangement within four years. Second: That the Board enter into no permanent affiliation which does not give the Regents complete control, within the specific purposes of the Foundation, of endowment funds, administration and teaching." (April 19, 1915.)

Immediately after the adjournment of the legislature the Regents *did* enter into an agreement *which is permanent unless revoked* by the Board or by the Mayos before September 1st, 1921.

That the Regents intended to make this affiliation permanent is indicated by the fact that President Vincent recently said, when discussing this bill, "I have not studied the question sufficiently to know whether the affiliation that was once perfected can be dissolved by a bill."

10. The fact that the affiliation was entered into and is now being perpetuated while William J. Mayo is a member of the Board of Regents, is against good public policy. (Statute 1913, § 8817.) It is inconceivable that the time should not come when Regent Mayo will find himself called upon to decide between his duty as Regent of the University and representative of the State, and his interests as a private individual in the Foundation which he created. The law wisely prohibits any man

from dealing with a public board of which he is a member, even in trifling matters of business. The principle is the same when millions are involved and contracts for all time are at stake.

11. The expert advice which has been offered by laymen and medical educators outside of the State in support of the affiliation is of little or no real value. Expert advice is valuable or not according to whether the expert knows the full facts and can sense them in their full bearings. The physicians of the State and the alumni of the Medical School are such experts because they know the facts and their interest as physicians and citizens in the welfare of the State as a whole makes their advice intelligent and compelling.

12. The Regents have not full control over the Foundation. Custody of the principal, the income of which must be expended for all time at Rochester, is merely rendering gratuitous service to the Mayos for which a trust company would demand a large annual fee.

The fact that the work must be conducted for all time at Rochester ties the hands of the Regents so effectively that other concessions made by the Mayos are impotent. The manner in which the affiliation was put through regardless of opposition and the slight consideration given to the plan is well illustrated by the fact that a prominent member of the Board of Regents, who is an alumnus of the University and who took an active part in the discussions preceding the affiliation, maintained publicly for over a year after the contract was signed, that the Board of Regents had full control over the Foundation and, whenever conditions at Rochester should warrant it, could move the Foundation to the University Campus.

This Regent has only lately become acquainted with the nature of the contract which he authorized and now admits his error.

Two years ago a prominent member of the Mayo Clinic who represented the Mayo Foundation at a public hearing in the Senate chamber was compelled to admit, in spite of the fact that the Mayo Foundation had been heralded over the whole country as a large gift in money to the University, that it was *not a gift of money* but a gift of *service*. We deny now that there is in the union even a gift of service to the State. The service rendered by the Foundation is directly to the Mayo Clinic—a private corporation.

Because of the above reasons, and in order that an early notice may be given to the contracting parties to terminate the affiliation, with the minimum loss to the welfare and prosperity of both, we ask your earnest and active support of the bill introduced into the State Legislature and known as S. F. 707 and H. F. 960.

Signed by the Committee.

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Dr. J. L. Shellman
Dr. Fred Sheppard
Dr. P. E. Sheppard
Dr. Iver Sivertsen
Dr. Carl Smith
Dr. L. Sogge
Dr. A. E. Spaulding
Dr. H. B. Sweetser
Dr. Thorfinn Tharaldsen
Dr. E. L. Tuohy
Dr. F. R. Weiser
Dr. C. G. Weston

MISCELLANY

TRIBUTE TO AN OLD-TIME PHYSICIAN

DR. BENJAMIN R. PALMER

By J. A. Du Bois, M. D.
SAUK CENTRE, MINNESOTA

Directly after the close of the Indian outbreak in Minnesota there located at Sauk Centre a gentleman whose lot henceforth was so enwrapped in the affections and interest of the people of the entire region that he left behind him a monument more durable than bronze or marble. Although now after thirty-five years his labors on earth have ceased, and many of the old settlers to whose needs he so faithfully ministered, have gone into the silence with him, such was the reputation he established that their children still mention his name with a peculiar fondness and reverence. This man was Dr. Benjamin R. Palmer, the first regularly qualified physician in Sauk Centre. Dr. Palmer was cultured and possessed a fine medical education, a portion of which he had received in Paris. He was a native of Pennsylvania.

A victim of pulmonary hemorrhages, forced to leave his home climate, Dr. Palmer came to Minnesota and its invigorating atmosphere. Nor did he seek what in his day would correspond to the idle isolation of the modern sanatorium, incapable, as it is, of not creating a morbid tendency to self-inspection which itself is unhealthful. He went directly to the frontier and plunging into the arduous duties, hardships, and even perils that characterize the labor of one of his profession in a pioneer civilization, prolonged his life twenty years by devoting it exclusively to the service of others. Stationed at the old stockade as military surgeon during the trouble with the Indians, at its cessa-

tion he erected a home in the village and continuously until his death, in 1882, devoted himself to the demands of the extended and thinly settled region which was tributary to Sauk Centre. In this life there was tragedy, there was pathos, there was sacrifice, which in other stations of society would have called forth the loftiest tribute of the panegyrist. Many of the homely incidents connected with his career have made an indelible impression upon the minds of the people of this locality. His horse Wilder and his dog Don, the faithful attendants upon his long and weary trips, over poor and dangerous roads, retain almost a human place in the memory of the pioneer families.

He was a man inherently resourceful and, with the most meagre of means at his disposal, met the emergencies often thrust upon him with an ingenuity that was indeed wonderful. Of a type of character modest and unassuming he faced the difficulties of his situation with a courage that was not less than heroic.

In the organization of the Grand Army of the Republic the B. R. Palmer Post was so named as a token of honor and respect for him on the part of the old veterans.

DR. A. C. ROGERS

1856-1917

They wait for you each day upon the stair,
They listen for your eager footstep's fall,
Your understanding word, your cheery call.
With simple faith, they hunt you everywhere,
Yearning, as children, for a father's care.
Although about your way a glory shone,
They do not comprehend that you are gone,
They do not understand you are not there.

They do not know, these little folk of thine,
That you have slipped away beyond our ken.
With ardent faith they ever have you by,
With childish hope they wait a seal or sign.
Would we who mourn thee, master heart of men,
Might also feel thy buoyant presence nigh.

—PAUL LYMAN BENJAMIN.

A NEW JOURNAL

Endocrinology is the title of a new medical journal, which is published by the recently formed association for the study of the internal secretions, to be published quarterly. The January number, which is the first one, presents a very attractive appearance. It contains 128 pages, and is well printed and bound.

Among the contributors to the number are Drs. Lewellys F. Barker, Charles E. de M. Sajous, Tom A. Williams, Henry R. Harrower, Emile Sergeant, and T. Brailsford Robertson.

Some of the subjects considered are "The Study of the Internal Secretions," "The Future of the Internal Secretions," "Endocrinological Problems," "The Prospects of Anterior Pituitary Therapy," and "The Adrenal White Line."

In addition to the original articles over seventy pages are devoted to abstracts covering the entire realm of medical literature on the subject of the internal secretions.

The purpose of this new medical association, and

its quarterly bulletin, are well set forth by Dr. Barker. He says: "In conjunction with the association for the study of internal secretions, it has seemed desirable that a bulletin be published in which contributions to knowledge in the domain of endocrinology may be promptly reported in summary. Papers on the subject appear in widely scattered journals. There is at present no place in which a frequently and regularly recurring collective review of progress is accessible. We need a periodical repository that corresponds to a 'vertical section,' a depot in which a review of every paper of importance, be it clinical, pathological, physiological, or anatomical, bearing on the internal secretions, will be stored."

To be this repository and, in addition, to publish original articles on the subject of the internal secretions is the function of this new publication. It is published at Los Angeles, California. Price, \$5.00 per year.

CHARLES R. BALL, M. D.

DENTISTRY AS IT IS PRACTICED IN A SMALL TOWN OF NORTH DAKOTA

A prominent dental surgeon of New York City tells of a recent trip to a little North Dakota town, where he was obliged to stay for a number of days. His natural interest in his profession caused him to drop into the office of the only dentist in town. He found a young man at work, and, introducing himself, asked for permission to look on while he was completing a task at which he was then engaged. Before many minutes had passed, the surgeon realized that he was seeing something entirely new in dental procedure and that he was learning something that would be of great value to him in his own practice.

When the young dentist had completed the work the eastern dentist complimented him upon the character of the results attained and asked him where he had learned the method. The young doctor responded that he had had his training at the Dental College of the University of Minnesota.

BOOK NOTICES

OBSTETRICS. Edited by Joseph B. DeLee. The Practical Medicine Series. Price, \$1.35. Price of series of 10 volumes, \$10.00. Chicago: The Year Book Publishers.

This book is worthy of the greatest praise. That it is invaluable to general practitioners and specialists alike will be demonstrated by its perusal.

It is very satisfying to obtain the meat of the year's work in obstetrics given in such an excellent summarization. Nearly every original article could be so summarized to the advantage of the profession.

The following topics in the book are of especial interest:

"Systolic Blood-Pressure in Pregnancy," "Quantitative Test of Abderhalden Reaction," "Syphilis and Pregnancy," "Pulmonary Tuberculosis and Pregnancy," "Toxemia of Pregnancy," "Eclampsia," "Extra-Uterine Pregnancy," "Management of Placental Stage of Labor,"

"Rectal as a Substitute for Vaginal Examination in Labor," "Pituitrin in Obstetrics," "Painless Labor," "Nitrous Oxide Analgesia in Obstetrics," "Cesarian Section," "Prenatal Care," and "Pathology of Puerperium."

This volume is intensely interesting, and should arrest the attention of all practicing obstetrics or all who are interested in its problems.

—LA VAKE.

SKIN AND VENEREAL DISEASES. By Oliver S. Ormsby, M. D., Professor of the Department of Skin and Venereal Diseases, Rush Medical College, and James Herbert Mitchell, M. D., Assistant in Cutaneous Pathology, Rush Medical College. The Practical Medicine Series. Price of this volume \$1.35; the series \$10.00. Year Book Publishers, Chicago, 1916.

The authors have deviated from the usual custom, and have made no attempt at classification of the various skin diseases. The pathology is dismissed in a few words, except in certain diseases; and treatment is touched upon but slightly.

While the book should not be recommended to undergraduates, it is especially valuable to the dermatologist. There are many helpful points in the general considerations, such as diet, differential blood-counts, and sugar contents of blood in different skin diseases.

There is an interesting chapter on war dermatoses; considerable space is devoted to syphilis. The authors mention the usual diagnostic methods; and under treatment they take up the various arsenical preparations that are, and have been, substituted for salvarsan. Syphilis is also discussed from the standpoint of life insurance.

Genito-urinary diseases are discussed briefly.

—BOREEN.

REPORTS OF SOCIETIES

MINNESOTA ACADEMY OF MEDICINE

A regular monthly meeting of the Academy was held on February 14, 1917, Dr. Colvin presiding, with twenty-three members present.

Cases were presented by Dr. Head on leuconychia in a case of amebic dysentery; by Dr. Corbett, a broken needle removed from the spine of a patient on whom puncture had been attempted; and by Dr. Farr, a case of renal calculus.

Dr. W. A. Jones read a paper on "The Common Forms of Mental Disorder and Their Treatment," which was discussed by Drs. Sneve, Herbert Jones, and Head.

The rest of the evening was taken up with a paper by Dr. Benjamin on "Membranous Pericolicitis and Irregular Fusion of the Mesocolon and Mural Peritoneum." Many lantern slides were shown to illustrate the different phases of the procedures discussed.

CASE-REPORTS

DR. HEAD: Mr. D., farmer, aged 37, single, American. Family history, unimportant. Personal history, good except for an attack of jaundice as a young man, and for some trouble with hemorrhoids.

About a year ago he began to have several movements a day, which were solid and contained mucus and occasionally some blood. This kept up for several months. About April 1 he did a job of painting, and soon after this began to have diarrhea with as many as nineteen or twenty movements a day and never below eight. He had to give up his work June 10. The diarrhea continued during the summer without remission, and did not respond to treatment. The patient was seen about October 1. He was a well-nourished man.

The physical examination was negative with the exception of a tender point in the lower left quadrant of the abdomen just above Poupart's ligament. The sigmoidoscopic examination showed marked inflammation of the lower bowel, which bled very readily; there were also many superficial ulcers. The wall was congested and red. Mucus and blood obtained from the bowel and examined microscopically showed a moderate number of amebæ. The stools were negative for tubercle bacilli, and negative for the Wassermann. The urine showed a faint trace of albumin and a very few granular and hyaline casts. The differential blood-count showed 6.5 per cent eosinophiles.

The patient's general condition improved remarkably under treatment, but he still continued to have local trouble. He made a remarkable gain in weight. About January 1, 1917, attention was drawn to the white bands on the finger-nails. The patient had first noticed them some months before, at which time they were at about the middle of the nail. The bands are described as follows: on the right index finger, 2 mm. wide and 10 mm. long; right middle finger, 3 mm. wide; and on the right little finger 2 mm. wide; left index finger, 1.5 mm. wide; and left little finger, 2 mm. wide. At the present time they are almost at the end of the nail. The patient states that they have been the same width as they are now. Both thumbs have some roughness in general over the nail. The nails are a normal pink color on both sides of the white bands. The toenails present no such marks and look normal. There are no ridges or furrows over the nails of the thumbs. A water-color drawing of the nails was exhibited to the Academy.

DR. FARR: Mrs. E. S., aged 60, married, housewife. She has one child living and well. The patient had scarlet fever when a child, and pneumonia at 54. Eight years before examination she had an attack of pain in the back and right loin, followed by vomiting, which lasted a week, and has had many attacks since, occurring at intervals from two weeks to two months. The attacks are much more frequent of late, and they last a day or two. She thinks she has passed gravel at times. The urine is never bloody. She vomited in most of the attacks. She has been in bed the past four weeks on account of severe pain. The present trouble began on January 15, 1917, and she entered the hospital on January 19. Röntgenograms taken on that date were unsuccessful. Her blood-pressure on admission, 180-100.

The first cystoscopy was on the night of January 20 at 6:15 o'clock. The catheter entered the left kidney without difficulty, but a catheter could not be introduced more than one-half inch into the right ureter. There was no urine in the bladder, and no urine could be obtained through the catheter. Plates showing the stone were obtained on this date. At 3 A. M. on the 21st she began to pass urine, voiding 5,160 c.c. in the first 24 hours; 4,500 c.c. in second 24 hours; 2,460 c.c. in the third 24 hours. Her blood-pressure on the 22d was 160-100.

The second cystoscopy was done on January 23. A catheter was easily introduced into both ureters. A functional test with phenolsulphonephthalein was made by Dr. Stanley. From the left kidney there was 12 per cent return the first hour, 13 per cent the second hour, or 25 per cent return in two hours. From the right kidney there was a 5 per cent return the first hour, 8 per cent the second hour, or a total of 13 per cent in two hours from the right kidney, making a total return of 38 per cent in two hours (intramuscular injection). The amount of urine returned was 44 c.c. in the first hour, and 30 c.c. the second hour from the left; 28 c.c. in first hour and 26 in the second hour from the right, a slightly smaller catheter being used in the right side. Her blood-pressure at this time was 170-100.

A third cystoscopic examination was made on January 26. The catheter entered easily. Thorium nitrate was injected, and a pyelogram made. She was operated on on the morning of February 1, having one hypodermic before operation. She was taken to the operating-room at 9:15, and returned at 11:00. The first afternoon she voided 300 c.c. of urine and during the first 24 hours 710 c.c.; during the second 24 hours she voided 510 c.c. She continued to void about 15 ounces daily, passing 1,050 c.c. on February 12, and 990 c.c. on February 13. On February 3 her blood-pressure was 165-90; on February 5 it was 140-79.

FREDERICK E. LEAVITT, M. D.,
Secretary.

THE OLMSTED COUNTY SOCIETY

At the annual meeting of the Olmsted County Society, the following officers were elected for the ensuing year: President, Dr. F. L. Smith, Eyota; vice-president, Dr. Geo. Eusterman, Rochester; secretary-treasurer, Dr. H. W. Meyerding, Rochester.

On February 28, 1917, the following program was given: Dr. Logan read a paper on "Lambliia Intestinalis"; Dr. Meyerding presented a case of "Compound Infected Fracture of the Femur Treated by the Carrel-Dakin Method"; Dr. Henderson read a paper on "Osteochondromatosis of the Knee-Joint"; and Dr. Van Ness read a paper on "Infantile Paralysis," which was discussed by Dr. Rosenow.

H. W. MEYERDING, M. D.,
Secretary.

NEWS ITEMS

Dr. G. R. Melzer has moved to Lyle from Hoffman.

Dr. F. W. Brandenburg has left St. Francis to locate in Norwood.

Dr. W. C. Kaufman, of Appleton, has opened a hospital at that place.

Dr. W. R. Claybough, of Wildrose, N. D., has moved to Grenora, N. D.

Dr. G. V. Jamieson, of Jamestown, N. D., has moved to Devils Lake, N. D.

Dr. F. A. Dunsmoor, of Minneapolis, is home from a vacation trip to Honolulu.

Drs. John Abbott, Paul Cook, and Herbert Davis, of St. Paul, have gone to Honolulu for a month's vacation.

Since the death of Dr. Pollock, of Hanley Falls, the town has had no doctor. A good place is open for the right man.

Dr. J. G. Kennedy, of Bridgewater, S. D., has moved to Garnett, Kansas, after spending fourteen years in South Dakota.

The Grand Forks (N. D.) District Society met at Grand Forks last month. Papers were read by Drs. Kittleson and Law.

Dr. C. H. Pelton, assistant superintendent of the St. Paul City Hospital, was married February 26 to Miss Elizabeth Sullivan, of St. Paul.

The Freeborn County Society held its February meeting in Albert Lea on Feb. 25. Dr. H. P. Ritchie, of St. Paul, read a paper before the Society.

Dr. Thomas Peppard, of Devils Lake, N. D., has dissolved his partnership with Dr. W. F. Sihler, and is taking postgraduate work in the eastern clinics.

The Minnesota Legislature will make an ample appropriation to enable the State Board of Health to meet the danger of an epidemic of infantile paralysis this year.

The Minnesota Homeopathic Institute will meet in St. Paul, May 8, 9, and 10, under the presidency of Dr. A. G. Moffat, of Howard Lake. Dr. Herman Kesting, 119 Concord St., St. Paul, is the secretary.

At a meeting of the St. Louis County Medical Society last week, the bill for the cancellation of the Mayo Affiliation was approved; and dis-

approval was expressed of the plan to accept pay-patients at the University Hospital.

Dr. Everton J. Abbott, a retired pioneer physician and surgeon of St. Paul, died last month at the age of 67. Dr. Abbott once held a chair in the Medical School of the University of Minnesota, and practiced in St. Paul over forty years.

Dr. R. W. Whittier, of Morton, has been commissioned a first lieutenant of the Medical Officers' Reserve Corps preliminary to the regular Medical Corps, and is attending the Army Medical School in Washington, D. C. This leaves a very desirable opportunity for a physician at Morton.

The second examination of the National Board of Medical Examiners will be held in Washington on June 13. The Board's certificate is now recognized by Colorado, Delaware, Idaho, Iowa, Kentucky, Maryland, North Carolina, New Hampshire, North Dakota, and Pennsylvania; and twelve other states are considering its recognition. Full information and blanks may be had from Dr. J. S. Rodman, Philadelphia.

STATIC MACHINE FOR SALE

One 24-plate static machine (Betz) in good condition. Cheap, if taken at once. Address D. Kalinoff, 308 E. Chestnut St., Stillwater.

ASSOCIATE WANTED

I want a German or Scandinavian physician to become associated with me in my hospital located in the Twin Cities. Address 465, care of this office.

SCANDINAVIAN PHYSICIAN WANTED

There is a good opening in a new town with excellent territory in northern Minnesota for a Scandinavian physician. Address 475, care of this office.

PHYSICIAN WANTED

Young doctor is wanted to locate in a wide-awake town. Good chance to work up a practice. Write President of Alberta Commercial Club, Alberta, Minn.

MEDICAL BOOKS AND INSTRUMENTS FOR SALE

The medical books, instruments, and medicines belonging to the late Dr. John Knight, of Redby, Minn., are for sale. Address Mrs. John Knight, Redby, Minn.

PRACTICE FOR SALE

A \$6,000 practice with collections of over \$5,000 in southern Minnesota town of 500. Unopposed. Railroad center and railroad surgeon appointment at this point. I desire to do post-graduate work. Wish to sell house and lot, Buick roadster, and office equipment. \$4,500 takes the whole. Population is mixed with German predominating. Nearest competition is nine miles. Address 476, care of this office.

POSITION WANTED

A young lady who has had experience as bookkeeper desires a position as office assistant in a physician's office in the Twin Cities. Address 467, care of this office.

PRACTICE FOR SALE

Unopposed practice in Minnesota, railroad and county appointment. Will sell for price of real estate. Mixed population. Best of reasons for selling. Address 472, care of this office.

MINNEAPOLIS OFFICE FOR RENT

I wish to rent my office on the corner of Lake street and Nicollet avenue. Will sell office equipment and furniture very reasonably. Rent, \$20. Address Dr. H. W. Quist, 3006 Nicollet Ave., Minneapolis.

A SALARIED POSITION WANTED

Or partnership with moderate investment in Twin Cities, by a physician experienced in anesthesia, radiography, and all lines of general work. Married; 35 years of age; clean habits; best of references. Address 466, care of this office.

PARTNERSHIP OFFERED

Young physician wanted as partner in a small modern Minnesota town; rich farming community; practice paying \$6,000 to \$7,000; hospital opportunity and surgery. Give all particulars and references in first letter. No real estate. Address 471, care of this office.

PRACTICE FOR SALE

Practice for sale in a town of 800 in western Minnesota; very large community; good roads; collection, 99 per cent. Practice amounts to \$5,000 or more a year. Am going into a hospital. I want to sell only my home. If interested, address 473, care of this office.

LOCATION OR PARTNERSHIP IN A CITY OR TOWN WANTED

I desire to form partnership, with a view to purchase of practice, with a good man in a city or town. English-speaking community preferred. Ten years' experience in general practice. Best of references. Address 477, care of this office.

OPENING FOR A PHYSICIAN

Fine opening for doctor in one of the best small cities in Minnesota, near the Twin Cities; good practice, fine office, fine office equipment. I am going away for one year to take postgraduate work in eye, ear, nose, and throat. Would like to have some competent man to take my office for one year, or will sell very reasonable.

This is a city of 3,000 inhabitants, and has the best of schools, and all churches are represented. Address 474, care of this office.

DOCTOR

Doctor: If you want practical postgraduate work during the fine season in the delightful city, write for particulars. Thirtieth annual session opens September 25, 1916, and closes June 9, 1917. New Orleans Polyclinic, P. O. Drawer 770, Graduate School of Medicine, Tulane University of Louisiana.

PUBLISHER'S DEPARTMENT

THE MINNESOTA SANITARIUM

The above-named institution is a home-like modern sanitarium, occupying a fine residence building in a quiet street in Minneapolis, and under the care of Dr. Leo M. Crafts, its medical director, with Dr. Julius Johnson as associate, and Mr. G. R. McDaniels as superintendent.

Such home-like institutions, which can give an unusual amount of personal attention to each patient, often get results not obtainable in a larger sanitarium.

Nervous and mild mental cases are accepted, as well as are cases of drug addiction; and the best results may be confidently expected.

THE BACTERIAL VACCINES

Dr. G. H. Sherman, of Detroit, Mich., is not only a manufacturer of bacterial vaccines, but he is an investigator and an author of recognized standing. His new book of over 500 pages on the application of vaccines is a real contribution to modern medical literature; and Dr. Sherman's research laboratory work along this line has been surpassed by few investigators at home or abroad.

Dr. Sherman is a man well worth knowing, and all our readers can know him by correspondence, if not personally. Any information desired upon the subject of vaccines will be cheerfully furnished by Dr. Sherman.

THE POKEGAMA SANATORIUM

This sanatorium for tuberculosis is located on one of the beautiful lakes for which Minnesota is noted, and in a broken country with a sandy soil, and has a commodious building and individual cottages.

Dr. Robert Glenn Allen, the resident superintendent, was formerly with the Trudeau Sanatorium, the Sea View Hospital, and the Chicago Municipal Sanatorium, thus getting an invaluable experience in sanatorium management, as well as in scientific training in the specialty of tuberculosis treatment. Dr. H. Longstreet Taylor, the director, is a well-known writer on the subject of tuberculosis, and is a St. Paul physician of high standing. Such a combination of expert talent gives the patients of the Pokegama Sanatorium all the promise of recovery that modern scientific treatment holds out.

THE FIRST AND SECURITY BANK

A Minneapolis newspaper is urging its readers to use its Washington Bureau of information, through which anyone can obtain, wholly without cost, information upon any matter with which the Government deals. We want to urge medical men to help themselves financially by opening a checking or savings account with a great city bank, and then make that bank his confidential financial adviser upon all his investments.

The First and Security Bank of Minneapolis, the largest bank in the city, will be glad to accept the accounts of both city and country physicians, and to give them advice upon all the intricate financial problems that confront medical men. Such a course in a single year will make the easiest mark in the profes-

sion a careful and safe investor, and a real and sane conservator of his surplus, instead of a spendthrift.

We commend this bank in the highest terms.

DR. FANTUS' CANDY MEDICATION

Dr. Fantus, of the University of Illinois, did a wise thing when he advised candy medication and worked out a suitable formula. When the first box of tabellæ dulces (sweet tablets) was sent to this office by the Western Chemical Company, of Hutchinson, Minn., we pronounced the product an unqualified success, and now it is recognized by the Council on Pharmacy of the A. M. A., and is selling in almost every state of the Union.

Candy medication means simply putting the staple unpalatable drugs up in sweet tablets, so that a child will take such medicine without the least protest.

Clinical samples and a list of the drugs so prepared will be sent to anyone requesting the same. Address the Western Chemical Company, Hutchinson, Minn.

THE WINKLEY ARTIFICIAL LIMB CO.

We believe it now about a third of a century since The Winkley Artificial Limb Co., of Minneapolis, began to make the best artificial leg ever devised or manufactured. Mr. Lowell E. Jepson was then at the head of the business, and he and his brother still conduct the business, now the largest establishment of the kind in America.

The Winkley limb was made on scientific principles, and it is the same today with such improvements as time always suggests to an educated man who takes pride in his product, and gives his undivided daily attention to his work.

The man who loses one or both of his legs, is entitled to the best substitute human ingenuity can produce. We believe the Winkley limb is exactly the one to take the place of a lost natural leg.

Fair dealing also characterizes this house; and, surely, medical men should appreciate this fact when a patient is compelled to resort to a substitute for a lost leg or arm.

THE VULCAN COIL

Some three years ago there appeared on the market a portable X-ray apparatus which has compelled the re-casting of all previous ideas as to the possibilities of a coil in small, compact form, and it has won its way to the markets of the world. We refer to the Vulcan Coil, made in Los Angeles, an advertisement of which appears in this issue. It was originally built only in small portable form, weighing about fifty pounds. The demand for machines of handsomer design, presenting a better appearance in the office, and also the demand for still higher-powered machines, has led the Vulcan Coil Company to place on the market a number of different models, all embodying the same simplicity of operation, reliability, durability, and remarkable efficiency of the original Type A.

Among the most popular forms is their Colonial design, which, when not in use, gives no hint of its purpose, appearing more like a high-class music-cabinet.

The manufacturers hold that, owing to recent developments in the use of intensifying screens, it is no longer necessary for physicians to invest a large amount in X-ray apparatus as no subject is beyond the range of the Vulcan Coil, and by the use of screens sufficient

speed in radiography is attainable for any purpose, including stomach (bismuth) work.

The Vulcan Coils are distributed in Minnesota, Wisconsin, and the Dakotas by Noyes Bros. & Cutler; and the adoption of this line by houses of this class is sufficient recommendation as to the quality.

MODERN TREATMENT OF WHOOPING-COUGH

Sufficient evidence has now been collected to demonstrate the value of the modern treatment of whooping-cough by means of inoculations of pertussis vaccine for prophylaxis against and immunization in whooping-cough.

With the demonstration of the Bordet-Gengou bacillus as the causative organism in pertussis, attention was immediately directed toward specific medication; and the results of vaccine therapy as reported by the New York Whooping-Cough Clinic, under the direction of Drs. Williams and Luttinger, prove conclusively that at last the physician has a rational, effective prophylactic and therapeutic agent at his command.

Eli Lilly & Company recommend as prophylactic doses of its pertussis vaccine: First, 500 million, followed at successive three-day intervals with 1,000 and 2,000 million, respectively. When the vaccine is used early for curative purposes and in sufficiently large doses, the paroxysms are diminished in intensity and number, improvement being manifested very rapidly after the first and second doses. The duration of the disease is shortened when vaccines are used and a greater percentage of recoveries without complications is recorded.

It is claimed by Eli Lilly & Company that the use of Lilly Pertussis Bacterial Vaccines as early as possible in epidemics will prove of great assistance in reducing morbidity and mortality and preventing the spread of the disease.

A convenient Vest Pocket Manual on Biological Therapy will be sent by Eli Lilly & Company to our readers on request.

THE BATTLE CREEK SANITARIUM

The increasing use of laboratory tests in modern medicine, as well as constantly growing patronage, has made necessary a considerable addition to the laboratory facilities of the Battle Creek Sanitarium. In the urinary, fecal, chemical, bacteriological, and pathological departments, about thirty persons are employed, a number of them being physicians and college graduates. In addition to the analyses, examinations, etc., in connection with the regular work of the institution, a certain amount of original research work is always carried on. At present, investigations are under way to find what carbohydrates will pass farthest through the intestine before undergoing complete digestion. Four cases of fistula near the ileocecal valve have made possible this study. Specimens taken from the fistula are examined and are also compared with those which have passed through the colon. The value of the study lies in the fact that undigested carbohydrates in the intestines lessen or prevent putrefaction. Those which are not absorbed in the earlier stages of the progress toward the colon are therefore of especial value.



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THE JOURNAL-~~L~~ANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, APRIL 1, 1917

No. 7

THE SPINAL FLUID IN DIAGNOSIS, PROGNOSIS, AND TREATMENT OF CEREBROSPINAL LUES*

By C. R. BALL, M. D.,
ST. PAUL

Studies of the spinal fluid have contributed greatly to the diagnosis of nervous disease. This applies, not only to syphilitic conditions, but to all other affections of both an acute and chronic character. A spinal-fluid examination is our best means of recognizing cases of meningitis in their incipency and of differentiating between the various forms. In a sick child, headache, vomiting, sensitiveness to light, and convulsions may mean anything, from a beginning exanthema or a simple intestinal disturbance to poliomyelitis or tuberculous meningitis. In such cases an examination of the spinal fluid is necessary if an early diagnosis is to be made.

What has just been said of acute disease of the nervous system applies with equal force to chronic affections. The distinction between organic and functional conditions in a patient complaining of headache, vertigo, and vague and obscure nervous symptoms, can frequently be made only by a spinal-fluid examination. In cases of syphilis, pathological spinal fluids often are to be found long before either subjective or objective symptoms are present.

In an examination of the spinal fluid the observations to be made are in relation to the pressure (whether it is increased or diminished), the globulin content, the pleocytosis, the gold solution, and the Wassermann reactions, and, in acute conditions, the presence of bacteria, as determined by the culture-tube. Increase in the spinal pressure is found in a variety of condi-

tions, such as all cases of meningitis, the various types of syphilitic nervous diseases, brain and spinal-cord tumors, arteriosclerosis, and hydrocephalus. In neuroses and psychoses of functional origin, and even in normal persons, the spinal-fluid pressure varies from time to time, so that variations in spinal-fluid pressure, just as variations in blood-pressure, may be said to possess only a relative value. Increased spinal-fluid pressure, for example, with negative laboratory reactions would hardly be considered as sufficient proof of organic disease.

The determination of the increase of globulin is a very important observation. An excess of globulin in the spinal fluid is said to indicate a degenerative and destructive process, somewhere in the central nervous system, and is regarded, when positive, as an evidence of organic disease. It may be present in all organic nervous affections. In organic nervous conditions of non-specific origin this reaction is apt to be mild, while in specific organic disease it is usually much more intense. There are a variety of methods of making this test, among which may be mentioned the Noguchi, the Pandy, the Nissl, and Nonne's Phase I. My preference is for the Phase I reaction because I am the most familiar with it. Nonne says of this reaction: "Of great practical importance is the fact that in syphilis, with a sound nervous system, a pleocytosis can occur, but the Phase I reaction is only positive when the nervous system becomes involved." Hence it has a particular differential value in distinguishing between functional and organic ner-

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

vous disease in persons who have had syphilis. This reaction does not occur in idiopathic epilepsy, the neuroses, or the psychoses, but is found in tuberculous meningitis, multiple sclerosis, poliomyelitis, tertiary syphilis of the nervous system in all its various forms, apoplexies, brain tumors, severe cases of cerebro-arteriosclerosis and sometimes in uremic conditions. While a positive globulin or Phase I reaction is always an indication of organic disease, the converse is not true,—that is, a negative reaction does not always exclude an organic affection, and even in organic disease of syphilitic origin it may be absent. I have observed two cases of tabes, which were not stationary cases, either, in which the reaction has been negative.

In a normal spinal fluid there is to be found only a small number of cellular elements, and these are mostly lymphocytes. Under normal conditions from 0 to 5 lymphocytes may be present in 1 c.mm., while in disease the number may vary from the borderland of 7 or 8 in chronic affections, such as multiple sclerosis, brain tumor, and some types of nervous syphilis, to 900 or 1000 in cases of paresis, tuberculous meningitis, or poliomyelitis.

The origin of the cellular elements in the spinal fluid is still a subject for discussion. Plaut says, "the similarity in form and the staining characteristics of the majority of the cellular elements in a normal fluid to those in the blood would suggest the lymph-stream as the source of both." The chief objection to this explanation lies in the fact that in pathological conditions types of cells occur in the spinal fluid which are never found in the blood. In answering this objection, Plaut says, "according to our present knowledge it is fair to presume that the lymphocytes, and the plasma cells and their descendants, come from the blood, and the few fibroplastic elements from the surrounding connective tissue."

The supposition that the cellular increase in the spinal fluid is due to meningeal irritation has been in general abandoned. In the light of present pathological researches, apart from hemorrhages and perforated abscesses, pleocytosis is now regarded as an evidence of inflammation of the leptomeninges. In order to have a pleocytosis, the inflammatory area need not be extensive: a circumscribed spot with an inflammatory infiltration anywhere in the nervous system, is sufficient. A lymphocytosis is found in such affections as primary and secondary syphilis,

nervous syphilis, tuberculous meningitis, and poliomyelitis. In cases of brain tumor, according to my observation, there is usually no lymphocytosis, or there is only a very moderate one.

The gold solution or Lange's colloidal gold test is another of the reactions in general use in spinal-fluid examinations. The principle of the reaction depends upon the precipitation of gold from the colloidal gold solution caused by the changing ratios of the protein content in the different dilutions. In the dilution series consisting of 10 tubes, the dilution starts with a 1 to 10 solution, and is doubled in each succeeding tube until in the 10th tube the ratio is 1 to 5,120. The proper color of the gold solution is a port-wine red, and this color is changed in the different dilutions of the series according to the degree and character of the protein precipitation. The color-scale, produced by the varying precipitation, is expressed by port-wine red, the normal color, bluish red, violet, blue, bluish water, and water. Certain pathological conditions are supposed to have their greatest precipitations and, therefore, most marked color-changes occurring in certain dilutions, as in tabes and cerebrospinal syphilis, where the greatest color-change is said to occur in the 40th and 80th dilutions, the 3d and 4th tubes. These dilutions are sometimes referred to as the "luetic zone." In general paresis the greatest change usually takes place in the first four or five dilutions, and these dilutions are known as the "paretic zone." In tuberculous and other forms of meningitis, the precipitation is the greatest in the higher dilutions from 1/160 to 1/320 and 1/640, and these dilutions are sometimes called the "meningitic zone." From this description of the gold solution reaction, diagnosis by means of it seems quite simple. All that is necessary is to put a little spinal fluid into the test-tubes containing the gold solution dilutions, and then observe in which zones the most marked changes in color occur. There is, however, one objection to diagnosis depending entirely on this method, and that is that the spinal fluid of other organic nervous diseases quite often has its greatest color-changes in the same dilutions as the ones mentioned. Naturally, then, if we trusted to the gold solution and classed all cases whose spinal fluids have their greatest precipitation in the luetic zone as cerebrospinal lues, and those which reacted in the paretic zone as paresis, the confusion in diagnosis would soon compare with the confusion in tongues at the Tower of Babel. The gold-solu-

tion reaction, more than any of the other spinal-fluid tests, in order to have value in diagnosis, requires confirmation,—for example, when a spinal fluid presents a positive globulin, increased cell count, and a positive Wassermann, it is interesting and corroborative to find the gold solution reacting in the paretic or luetic zones. The value of the gold solution should be considered chiefly as corroborative, that is, additional evidence in a case which has already been fairly well proven from other sources.

In all nervous affections a spinal-fluid Wassermann is of distinctly more value in diagnosis than a serum Wassermann. The spinal-fluid reaction is frequently positive when the serum is negative. The frequency of the negative serum reaction in specific nervous affections has been the cause of many mistakes in diagnosis which would not have occurred if a spinal-fluid Wassermann had been made. The reaction itself is less liable to error in the spinal fluid than in the blood. Cumulative evidence of its correctness may be obtained in the increase in the intensity of the reaction where larger amounts of fluid are used. A one + positive reaction with 0.2 c.c. of fluid becomes a two ++ positive with 0.4 c.c. of fluid, and so on. Thus in a spinal fluid presenting this step-like increase in the intensity of the reaction, one can feel absolutely sure of its correctness, even though there are no corroborative symptoms. Standing alone it is sufficient proof for a positive diagnosis. While the spinal fluid in specific nervous diseases usually reacts positively when the larger quantities of fluid are used according to Hauptmann's method, it would be a serious mistake to exclude syphilis in any doubtful case just because the Wassermann reacted negatively. There are atypical cases in syphilis of all types, and this includes paresis, where the spinal fluid gives a negative reaction. In making this reaction it is important to remember that the antibodies increase with the quantity of fluid used, and the probability, therefore, of obtaining a positive reaction increases. In a spinal-fluid Wassermann for diagnosis the maximal quantity of fluid should always be used. In my work the reaction is usually made with 0.4 c.c., 1 c.c., and 2 c.c. of fluid. As an illustration: The reactions in the fluid of a patient one year ago were a one +, Phase I, 26/3 lymphocytes, and a negative Wassermann with 1 c.c. of fluid. A few weeks ago the reactions in the fluid of the same patient were practically the same except with 2 c.c. of fluid the Wassermann

was positive. There are not infrequently cases where the positive reaction obtained with the maximal amount of fluid may be the deciding factor in the diagnosis.

The Wassermann test differs from the other reactions in that it is the only one which, when present, is pathognomonic of syphilis.

It may be said of each one of these reactions that its value is largely a relative one, and depends for its interpretation in diagnosis on the symptoms accompanying it. An isolated spinal-fluid reaction, just as any other isolated symptom, requires for its proper interpretation a knowledge of the clinical syndrome in which it occurs. For example,—the absence of knee-jerk as an isolated symptom in a case without any other information, would have very little diagnostic value. It may be found in a variety of conditions, but, in order for it to have its proper diagnostic significance, a knowledge of all the other symptoms accompanying it is necessary, just as in the case of the isolated reaction. Laboratory findings were never intended to obviate the necessity of a clinical examination. They are simply an aid to the clinical examination, and both should always be carefully considered together in making a diagnosis. The following cases will perhaps illustrate this better than I can otherwise express it:

CASE 1.—Date of examination, December 20, 1915. Miss C., aged 21. Occupation, clerk. Nothing significant in family or past history. Present trouble began in November, 1914. Chief symptom, headache. At one period there was temporary loss of sight in one eye with a complete return a week after it had been lost. Some pricking sensation in hands and feet. Difficulty in walking because of a weakness and stiffness in the limbs and the loss of the sense of balance. An increased emotional state with tendency to laugh or cry without cause.

Physical Examination.—Nothing distinctive.

Neurological Examination.—Mental condition, good; pupils, normal; eye-movements, free; paling of temporal side of both papillae; abdominal reflexes, absent; upper deep reflexes, normal; lower, deep reflexes, lively, double ankle clonus; double Babinski; Romberg, positive. No sensory disturbances were observed.

Spinal-fluid Examination.—Pressure, normal, Phase I, one + positive; lymphocyte count, 16/3; spinal-fluid Wassermann, negative, with a maximal quantity of fluid. Gold solution reacting typically in the paretic zone.

In this case the history, clinical examination, and laboratory findings—all had a share in determining the diagnosis. The family history, personal history, and clinical symptoms were against the assumption of a specific origin, but did not entirely eliminate the possibility of this.

In the laboratory examination the absence of the Wassermann reaction with the gold solution reacting in the paretic zone, was an incongruity, to my knowledge never observed in a specific condition.

The clinical examination suggested multiple sclerosis.

The laboratory findings eliminated syphilis, and in the positive Phase I, the lymphocyte count, and especially the gold solution, which frequently reacts in the paretic zone in multiple sclerosis, confirmed what the clinical symptoms had indicated.

The next case is interesting because it not only illustrates the point I wish to emphasize, but also shows the importance of a spinal-fluid examination in all obscure nervous conditions.

This patient had several negative serum Wassermans before he consulted me, and was advised by his physicians that nothing more could be done for him.

CASE 2.—Patient, a male; merchant; aged 65; married; one daughter living; no children dead, and no history of miscarriages; in earlier life, drank to excess; admits gonorrhea, but denies syphilis; two years before date of my examination, the patient fell, striking his head on the ice. He was dazed for several minutes after his fall, and "saw stars." The present trouble began soon after this fall. Chief complaint, loss of memory, very irritable, noises in head, and deafness in both ears; retention of urine, with resort to catheter twice daily.

Physical Examination.—Weight, 165 lb., or 35 lb. below normal; blood-pressure, 100; otherwise nothing significant.

Neurological Examination.—Station, poor; pupils, normal in size and shape and reaction; eye movements, free; aerial better than bone conduction; superficial and deep reflexes present. No sensory disturbances were observed.

Spinal-fluid Examination.—Pressure increased; globulin, a three +++ positive; lymphocytes, 51/3; serum and spinal-fluid Wassermann, negative; gold solution was not made.

The diseases from the clinical examination to be most considered in differential diagnosis were cerebral arteriosclerosis from natural causes, and paresis and cerebrospinal syphilis.

In this case, both the history and clinical examinations failed to make the distinction. The spinal fluid findings excluded the arteriosclerosis of old age by the intensity of the globulin and the cell count, and excluded paresis because of the negative Wassermann.

Nonne has happily expressed the relationship which should exist between the clinical syndrome and the laboratory findings. He says the clinical symptoms will and must still remain our guide, and no more serious mistake could be

made in the differential diagnosis of a doubtful case than to displace proven clinical experiences in favor of serological, microscopical, and chemical examinations. The clinical symptom complex will still occupy the first place, and these newer methods, where it fails, will be brought to its assistance. This applies in prognosis, as well as in diagnosis.

In the recent medical literature, in order to show the efficiency of various therapeutic measures, laboratory findings have been given in detail, but very little has been said in regard to the clinical improvement. The changing of a two ++ positive Wassermann to a one + positive, the diminishing of the cell count from 55 to 27 or 17, as the case may be, was reported as convincing evidence of the value of the treatment. Experience has shown that the laboratory findings are very often an exceedingly poor criterion by which to judge of the clinical course. On this point, Nonne says that, in his experience, he is unable to find any prognostic value either in the intensity or mildness of the reactions. Mild reactions may occur in cases presenting severe symptoms, and, on the other hand, intense reactions occur in cases showing practically no symptoms. I have at present two cases under observation, in one of which, a case of tabes, the clinical symptoms are severe and the laboratory findings negative; in the other, a cerebrospinal lues, where the reverse situation obtains, clinical symptoms are absent with intense reactions. This much, however, may be said of laboratory findings in prognosis in cases of true cerebrospinal lues, cases of tabes and paresis excluded. In such cases, observation has shown that, when the spinal fluid becomes normal and remains so, they do not relapse, while, on the other hand, as long as the fluid continues pathological the danger of a relapse is always present. Our endeavor should be, then, in these cases to treat them until the reactions in the spinal fluid are negative. In both tabes and paresis the conditions are different. In these affections the obtaining of negative reactions by treatment, is the exception, rather than the rule. In the few cases of tabes which I have observed with negative reactions (I have never seen a case of paresis where the fluid was not pathological) the clinical course was progressive in character in each instance.

In conclusion, I wish to emphasize the great value in diagnosis of a spinal-fluid examination in all nervous diseases, but, in the same breath,

to quote again Nonne's admonition, "No more serious mistake could be made in the differential diagnosis of a doubtful case than to displace proven clinical experiences in favor of serological, microscopical, and chemical examinations."

DISCUSSION

DR. A. S. HAMILTON (Minneapolis): I wish to congratulate Dr. Ball on the clear and conservative presentation he has given of this subject. It is probably not necessary now to say anything in commendation of the biologic tests in the diagnosis of syphilis of the nervous system. Most men accept them, and when the time comes that the tests are better interpreted, applied with better judgment, and especially when the work in some of the laboratories is better done, there will be even less objection than there now is.

When I say "better done" I mean not only that the tests must be done completely as Dr. Ball has expounded the subject, including both the examination of the blood and the cerebrospinal fluid, but also that they must be done by men qualified to do the work. There is no doubt that today men are doing laboratory work, just as men are practicing in every other field of medicine, who are not qualified by training and experience to do the work which they are attempting to do, and this results sometimes in very disagreeable situations.

I cannot illustrate this better than by telling a story, told me by a physician in Minneapolis who assures me that it is an absolutely correct statement of what happened. This man is, or was, a profound neurasthenic, and in the course of his illness he developed the notion that he might have had syphilis. He had had some blood-tests made previously. I cannot recall off-hand what the results of these were. He had a multitude of symptoms, but nothing suggesting syphilis, and I urged him to have a spinal puncture made. He declined, stating that he was afraid of the needle, and went away; but, after he had gone, he decided to have further blood-tests made. Five blood-specimens were taken from him on that date. When the five reports came back, three were negative and two were positive. You can imagine the state of mind of this patient. I might add that this man later did submit to a spinal puncture, and the tests made of the spinal fluid were all absolutely negative. I have no doubt that he has no syphilis, and probably never has had any.

As the results of laboratory tests come to us they may be divided into three groups: positive, negative, and inconclusive. They are positive when a sufficient number of tests has been employed, and come back positive. They are negative when a sufficient number of tests has been employed, and come back negative. They are inconclusive when an insufficient number of tests has been employed, or when some of the results are positive and some are negative.

When a positive result is returned, if the tests have been made as Dr. Ball has given them, I do not know what one can do but accept the diagnosis of syphilis whatever the clinical manifestations may be. Of course, it is possible that a man may have syphilis and also have some other diseases, and the clinical symptoms may arise from the other diseases; but if his tests are positive, as Dr. Ball has given them, he must have syphilis. On the other hand, if the tests are insuffi-

ciently made, that is, if not sufficient tests are employed, or if the tests have been made by someone who is not qualified to do the work, we may have some very disastrous experiences if we rely absolutely on the tests. An illustrative case would be one where the blood-test alone is made in an individual suffering from *tabes dorsalis*. The result here must necessarily be inconclusive.

Occasionally a report comes back positive in a case where we have every clinical reason to believe that syphilis does not exist. I could mention several instances of this from my own experience. For example, I recall three cases of brain tumor which I have seen where the patients had positive results from blood-specimens, in two cases with one test only, and in one case with two tests. In the case with two positive blood Wassermanns, a subsequent cerebrospinal-fluid examination was negative. One patient was operated on, and a sarcoma removed. The two other cases came to autopsy, and tumors were found; and in both of the latter cases the examination of the brain showed absolutely no evidence of syphilis.

Unfortunately, however, when a patient has once had a positive reaction from a test for syphilis, he will rarely ever get it out of his own mind, and it is even very difficult for a physician who comes into the field later, knowing of this positive reaction, even though he subsequently gets negative responses, to feel that the positive test may be disregarded.

DR. C. E. RIGGS (St. Paul): Dr. Ball's paper was timely, notable for its clarity, and, best of all, it was practical.

In the diagnosis of incipient meningeal conditions and in their differentiation, a study of the spinal fluid is a matter of supreme importance. During the last epidemic of poliomyelitis, Johnston and Hammes observed that the gold-solution reaction occurred in the luetic zone in the acute stage of the disease. After the acute symptoms have subsided this reaction disappears, and Johnston suggests that in abortive and not clearly marked cases this reaction is a valuable aid in helping us to arrive at a diagnosis. Globulin is one of the most common factors in a pathological spinal fluid. Dr. Ball has happily emphasized two facts: first, the difference in the intensity of the reaction between the globulin as it exists in nonspecific disease and in specific disease; secondly, that in syphilis, the occurrence of an excess of globulin is always an evidence that there is involvement of the central nervous system.

Last fall Dr. Phelps of St. Peter gave Drs. Haumes, Michael, and myself the opportunity to examine twenty-four specimens of blood and spinal fluid from patients at the St. Peter State Hospital. Three of these cases were atypical in their biologic reaction. One had the gold-solution reaction; in a second case, all the reactions were negative; and in the third there was a reaction in the luetic zone. Forty-two out of 43 of our cases of paresis have given the paretic curve; 127 out of 130 cases of Miller and Levy have given the paretic curve. Ninety per cent of Main's cases gave the paretic curve; and 50 per cent of our tabetics have given a distinctive reaction, which I call the tabetic curve; and practically all of our cases of cerebral spinal lues have given a reaction in the luetic zone. If it were not for the freakishness of the gold-solution reaction, we should feel more certain as to results.

One of our cases of luetic endarteritis gave the paretic curve. One case of cerebral spinal syphilis of one year's duration gave the reaction of paresis. A number of our cases of tabes have given the reaction of paresis, probably of taboparesis. One of our cases of disseminated sclerosis gave the curve of paresis, and Miller and Levy found this paretic curve three times in disseminated sclerosis, while another observer reports this reaction in six out of eight cases of this disease. This so-called paretic curve has been observed in puerperal eclampsia, cirrhosis of the liver, and cerebral abscess.

DR. BALL (closing): One of my objects in presenting this paper to the Association was to emphasize the importance of utilizing the clinical findings in connection with the laboratory findings in the interpretation of their value. For instance, the other day a man came to me, who had syphilis a number of years ago, but for a period of four or five years had experienced no subjective or objective symptoms. He had before had three or four negative serum Wassermann's.

He wished to know whether he was free from his diseases; and before he entered into a marriage he wanted all of the examinations made that could be made to determine this point. So we made a spinal-fluid examination along with other examinations, which resulted as follows: The globulin was negative; the cell-count was 14/3; there was no change in the gold-solution reaction; and the Wassermann was negative

with 2 c.c. of fluid. This, with the negative clinical findings and the absence of any subjective or objective symptoms, made us feel that the 14/3 lymphocytes indicated only the lymphocytosis that is said to occur in most cases which have had syphilis, even though the patients have been cured.

The following case, with a very similar cell-count to the one just related, illustrates what a difference in interpretation positive, subjective, and objective symptoms make:

A few years ago a man was sent to me from Duluth by Dr. Graham, with symptoms that simulated a chorea. He had, among other things, one pupil larger than the other. He was in a very confused mental state. The serobiological findings were as follows: serum Wassermann, negative; globulin, negative; cell-count 18/3; Wassermann in the spinal fluid, negative. There were only four more lymphocytes in the cell-count than in the case which we had decided negative because of the absence of other symptoms. In this case, however, with the positive, subjective, and objective symptoms, the cell-count took on a different meaning, and we felt, because of the other symptoms, that a definite diagnosis of cerebrospinal lues could be made.

We must learn to study the laboratory results in the light of the subjective and objective symptoms; and only by so doing shall we be able to give them their proper significance.

FRACTURES AND DISLOCATIONS OF THE SEMILUNAR CARTILAGES*

By F. F. GRIEBENOW, M. D.

BISMARCK, NORTH DAKOTA

Injuries to the semilunar cartilages of the knee are of comparatively frequent occurrence. They constitute by far the greater majority of the pathological conditions found in internal derangements of the knee-joint. The cartilages may become partly or completely torn or fractured, and the resulting fragments may be dislocated from their normal positions. A material dislocation of an entire cartilage without fracture is probably impossible. Several types of injuries have been recognized:

1. A loosened periphery of the cartilages with the ends attached.
2. The anterior horn loosened with the middle and posterior parts attached, which is a common condition.
3. A transverse fracture with internal dislocation of the fragments owing to the relaxation of the ligaments.
4. A loosening of the posterior end.

5. Longitudinal fissure and displacement inward of the loosened part.

6. Loosening of the entire meniscus, allowing a back and forth movement between the articular surfaces.

Lesions of the semilunar cartilages usually result from sudden twisting movements of the body, while the weight of the latter forces the corresponding foot firmly against the ground. The injury may occur during tennis playing, dancing, jumping, or, at work, when the tibia is rotated outward on the femur, with the knee slightly flexed. It may occur from a severe wrench, as in playing football, or from a very slight misstep. Direct violence very rarely causes the injury. Falling from a height and alighting on the foot with extended knee is an infrequent cause. More often the accident occurs during apparently insignificant movements. A sudden bending forward of the body with extended knee, a sudden turn of the body when the leg is fixed, or a forced movement with a flexed knee are among the common causes. The internal cartil-

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

age is luxated by sharply rotating the leg outward; the external cartilages by suddenly rotating the leg inward.

Two of the cases I have to report experienced the locking of the knee, first, when arising in the morning. While lying in bed a sudden movement of the body, when the foot is caught under the covers, may produce a dislocation without even awakening the sleeper.

The internal meniscus is injured much more frequently than the external. This is due chiefly to the fact that the weight of the body is more often thrown on the internal condyle during normal movements of the body; but it is also due to the fact that the internal cartilage is more fixed than the external and does not, therefore, possess the give-and-take function of the latter.

The diagnosis can usually be made by taking a careful history of the case and making a thorough physical examination. At the time of the accident the patient experiences a pain at the site of the injury, which may be severe enough to cause a faint. Swelling, pain, and effusion often follow.

The joint becomes irritable; and chronic synovitis, marked muscular atrophy, and joint relaxation result. When the cartilage is fractured crepitation can sometimes be felt, and the patient describes a sensation of grating. If the loosened cartilage is displaced to the margin of the patella or into the popliteal space it can often be palpated as a freely movable body within the joint. The most constant symptom is a sudden inability to extend the knee. This locking of the knee may occur so suddenly while the patient is walking that he may fall on the sidewalk. The locking occurs at varying intervals, and is followed each time by a few days' soreness and swelling of the knee.

Radiography is of great assistance in the older cases when the displaced meniscus has become calcified; in recent cases, before hardening of the loosened cartilage, the x-ray findings are negative.

Jones has emphasized the fact that fractured and displaced semilunar cartilages may be confused with other loose bodies, synovial fringes, lipomata, and osteomata. Loose bodies usually lock the knee for only a brief moment, and do not cause acute symptoms. They may be isolated in the different parts of the joint, and sometimes may be demonstrated by radiography. The symptoms caused by synovial fringes are less acute, and do not involve the internal lateral

ligament. They are usually associated with a thickening on each side of the ligament of the patella. Lipomata rarely lock the knee, and can often be felt. Extra-articular osteomata can easily be differentiated by palpation and radiography. They may cause locking of the joint by tendons slipping over them.

The following case-histories are taken from the records of Drs. Quain & Ramstad for the past four years:

CASE 1.—S. M., a farmer, aged 29, came to the office complaining of a sore right knee. The original injury was sustained by slipping and falling on the ice. The joint became very swollen and painful so that he was unable to walk for a week. The pain and stiffness gradually disappeared, and after one month the knee was apparently well. Four months later the pain returned and, in addition, an occasional sensation of something slipping in the joint. Six months after the first injury another attack of locking was caused by twisting his leg while walking in the hay; the knee could not be straightened for several minutes. An examination at this time showed effusion in the joint and a point of tenderness over the internal cartilage. Radiography was negative. Operation revealed the anterior third of the internal cartilage loosened along the peripheral margin and attached laterally and posteriorly. A segment a little over one inch in length was removed. The patient made a good recovery, and reported perfect results two years after the operation.

CASE 2.—Rev. G. H., while a missionary in China, in 1912, suffered an attack of severe dysentery and became very emaciated. During this emaciation while attempting to get out of bed one morning the knee suddenly twisted and locked. In 1913 he returned to the United States and was operated on at the Battle Creek Sanitarium, when a cartilage one and one-quarter inches long was removed from the knee-joint. He had no more trouble for a period of nine months, after which the knee again began to catch and lock at intervals. During the examination in the office a few months later the joint locked while the patient turned to get off the table. A mass could be felt in the popliteal space, and the x-ray revealed a shadow in the intercondylar fossa.

A longitudinal incision was made along the inner edge of the patella and the joint opened. A loose portion of the internal cartilage two inches long and adherent at the posterior cornu and a smaller fragment the size of a bean, situated deep in the joint between the condyles and attached to the edge of the intercondylar notch by a delicate pedicle, were removed. The limb was immobilized with a cast. After some rise of temperature for several days the patient made an uneventful recovery, the wound healing primarily.

CASE 3.—L. P., a farmer, was injured by a fall, striking his knee against a plow. For two weeks he was unable to work on account of severe pain and stiffness. During the third week the condition gradually improved until one day, when stooping to lift a bucket of water, the knee suddenly gave away, and for two or three minutes the limb could not be straightened. On examination the knee was found to be tender and swollen,

and, when manipulated, gave a distinct sensation of grating over the internal cartilage. The x-ray examination was negative. A transverse incision was made, and the joint was opened. The anterior cornu of the internal cartilage was found to be loosened from its attachment, and was sutured back into its original position with interrupted formalized catgut sutures. The patient reported five months later that his condition was improved although he still felt some weakness when turning the knee outward.

CASE 4.—N. M., a young man, aged 21, a clerk in a general store, complained of a sore knee for six months. He thought his knee was first injured by jumping from a high shelf in the store three years previously. When playing ball during the summer the knee would have a tendency to lock, causing intense pain. The knee had been swollen for two months. Examination showed the joint distended with effusion, and a grating could be felt over the internal semilunar cartilage. The x-ray examination was negative. Some of the exudate was removed, a 2 per cent solution of formo-glycerine injected, and a Buck's extension applied for one week previous to the operation. A transverse incision was made into the joint, and a loose cartilage one inch long situated near the intercondylar notch was removed. A cast and a Buck's extension were applied. There was considerable soreness, with a rise of temperature, for five days. On the tenth day the extension was removed, and passive motion and massage applied.

This patient, who was operated on two years ago, reports that the stiffness gradually left the knee during the first year after the operation, and that he has had no trouble whatsoever since then.

CASE 5.—S. L., a farmer, aged 20, first injured his left knee while walking to his barn. His foot slipped suddenly, turning his leg sharply outward and wrenching the knee badly. The condition improved for several days, but during the second week the pain returned, and at times he had difficulty in extending the leg. On examination, two weeks after the first injury, the joint was found to be swollen and fluctuating. A loose body could be felt near the internal edge of the patella when manipulating the joint. A loose cartilage was diagnosed, and operation was advised. Before making the incision the loose body was transfixed with a needle. A longitudinal incision was made, and a triangular piece of cartilage, 2 cm. in diameter and absolutely loose, was extirpated. The usual after-treatment was given, and the patient was discharged on the fourteenth day. The patient reported nine months after the operation that the knee was not causing him any more trouble.

CASE 6.—F. R., a laborer, aged 40, complained of a sudden locking of the left knee at irregular intervals, each locking being followed by soreness of the knee for a few days. The onset and early history of the case was indefinite, but he had suffered with the trouble for five years.

At operation a small pedunculated piece of cartilage was removed from the anterior part of the knee, internal from the patella. The remainder of the cartilage appeared normal. The patient made a good recovery, leaving the hospital on the fourteenth day; and one year after the operation he reported a complete recovery.

CASE 7.—J. G., aged 39, injured his left knee while

stooping to pick up something from the ground. The knee suddenly locked in a flexed position, and could not be straightened until it had been rubbed and manipulated a few minutes. The tenderness disappeared gradually, but, whenever kneeling or twisting the leg, the trouble would return. Examination two months after the initial injury showed a loose portion of the internal cartilage easily palpable, just internal to the ligament of the patella. Radiography was negative. Re-position was attempted, and a plaster cast applied, but the patient returned after a month with no improvement. The joint was then aspirated and injected with formo-glycerine, and a week later was operated on. The internal cartilage was found to be loose in its entirety, but it held fast anteriorly and posteriorly, making a bridge across the joint. The cartilage, hardened and thickened, was firmly attached anteriorly, and held at the intercondylar notch by a thin synovial membrane. The entire piece was removed, and the usual post-operative treatment carried out. When examined nine months later the knee was functioning perfectly.

CASE 8.—L. M., a well-driller, aged 21, injured his left knee by stepping into a deep hole, which caused him to stumble and wrench his knee severely. He felt something slipping in the knee, and could not move his leg for several minutes. Since then he had had difficulty in extending the knee in getting up from a chair. On the seventh day after the injury he had a sudden locking when getting out of bed; the knee could be flexed but not completely extended. The pain seemed to be under the patella. Examination ten days after the initial injury revealed a small amount of effusion and the leg absolutely fixed in a position of slight flexion. No manipulation could extend the leg any further. With the exception of a slight tenderness over the anterior end of the internal meniscus, physical examination revealed nothing. Radiography demonstrated a shadow deep in the joint behind the patella. The joint was aspirated, and a solution of formo-glycerine was injected seven days before the operation. A transverse incision was made, beginning at the inner edge of the ligamentum patellæ and extended across the internal lateral ligament just above the internal semilunar cartilage. A transverse fracture of the meniscus was discovered, and the anterior portion was loosened from the tibia, but still attached to the relaxed capsule. The posterior segment, hard and thick, was lightly attached to the intercondylar notch. Both segments were extirpated, and the capsule sutured. This patient stated twelve months after the operation that the knee was in perfect condition.

CASE 9.—B. B., an electrician, aged 45, injured his knee in 1911 by trying to stop a frightened horse. After the accident the knee began to swell rapidly, and was very painful for several days. The condition gradually improved by keeping the part at rest and using crutches. In three months the joint seemed almost as good as usual. Three years after the original injury the knee began to pain again and lock repeatedly. An examination in 1914 showed a small amount of fluid and tenderness over the internal lateral ligament; no loose body could be felt, and no obstruction to the motion was produced by manipulation. The diagnosis of a displaced cartilage was made, and was confirmed by the x-ray examination.

At operation a piece of hardened cartilage was found

entirely free in the intercondylar fossa and was removed. It had evidently been part of the posterior horn. The patient reported a complete recovery eleven months after the operation.

CASE 10.—M. G., a farmer, gave a history of having first injured his right knee in 1905 by striking it against a mass of hard clay. The usual symptoms of pain, swelling, and fluid in the joint resulted. On the third day he tried to move the joint, and suddenly caused it to lock. After a few moments he was able to straighten the leg again without much effort. Since then he had had similar attacks repeatedly, and on one occasion he was unable to overcome the locking, and had to call a physician, who reduced the displacement by force. Examination at the office one and one-half weeks after the last injury demonstrated tenderness posteriorly and laterally and a limited extension. The x-ray examination was negative.

At operation the anterior portion of the internal cartilage was found entirely loose and freely movable except at its base, where it was still attached to the capsule. The anterior dislocated portion was excised. The patient reported ten months after the operation that the knee was in perfect condition.

In summing up these ten cases we find that they were all injuries of the internal semilunar cartilages; five were fractures and five were displacements. The operations consisted of partial extirpation in seven cases, complete extirpation in two cases, and suturing in one case. All patients reported very satisfactory results with the exception of the one where suturing alone was done. The fact that this patient had the poorest results is an argument for radical extirpation of the damaged cartilage.

The best treatment is unquestionably the radical extirpation, but in a few early cases a cure or improvement for a time can be accomplished by immobilizing the joint for a number of weeks or months with plaster casts and rest in bed. Reduction should always be attempted by flexing the knee, and, in case of loose internal cartilage, rotating the tibia outward while pressing over the cartilage and then quickly rotating the leg inward with a sudden extension. In cases where there is a posterior displacement, a fracture, or a dislocation deep in the joint, complete extirpation alone can give permanent cure.

In the surgical technic no other feature is so important as asepsis. The principles of asepsis in the surgery of bone and articular surfaces, first accentuated by Lane, of London, and corroborated by the leading surgeons of the world, must be practiced to obtain good results. No other part of the body is more easily infected, and the more recent the injury the more hazardous is the operation. Fortunately, in these cases the danger of infection is not so great as in a

perfectly normal joint. In most of these injuries the joint is in a condition of chronic inflammation. The tissues about the joint have become infiltrated, and the lymph-spaces "coffer-dammed," as Murphy has expressed it. In the more recent cases this condition is not present, but should be produced by aspirating and injecting a 2 per cent solution of formo-glycerine a week or longer before the operation. The preparation is of great importance. The limb is shaved and thoroughly scrubbed two days before the operation. Desquamations of the skin are removed, and an alcohol dressing is applied on the day previous to the operation. Instruments and articles used receive special sterilizations. Nothing is allowed to touch the wound that is not absolutely sterile. After the first incision towels are clamped in the wound, and a new scalpel is used. Sponges are allowed to touch the wound but once. Ligatures, needles, and sponges are handled with instruments. Gloves are never allowed to touch the wound or the part of an instrument put into the wound. When the joint is opened care is taken not to abrade the synovial membrane, and thus prevent possible adhesions. After the operation a cast and a Buck's extension with fifteen pounds weight are applied, and the bed placed in the Trendelenberg position. After ten or fourteen days the cast and extension are removed, and massage and passive motion applied.

The end-results are favorable, providing the technic is perfect. As a rule the excision of the cartilage does not impair the function. Klapp has had very good results with complete extirpation and has advised this procedure in every case. Suturing the loosened portion of a cartilage into its normal position has met with less success in the hands of those surgeons who have practiced this technic in a considerable number of cases. Reichel has found that the results depend largely on the age of the patient and the duration of the injury. In young individuals and recent cases, the results are usually ideal. For patients over fifty, and in cases in which there is chronic synovitis and beginning arthritis deformans, the outcome is not so favorable.

DISCUSSION

DR. C. N. CALLANDER (Fargo): In my list of cases I had purposed showing on the screen there were several quite in line with the doctor's group, but presenting interesting associated conditions, complicating the treatment.

One was the case of a man of fifty-five years of

age who was thrown from his rig injuring his knee. The injury occurred several months previous to my examination, at which time he presented a marked deformity with a weak knee-joint, and the femur and tibia not in good functional alignment, though there was a good degree of joint-action.

The x-ray showed the inner tuberosity of the tibia driven downward, so that the corresponding articular surface was on a considerably lower level than that of the outer tuberosity. In this position the trauma tore away the corresponding tibial spine, which is shown loose in the joint cavity. In this case the cartilage is loose, and at times locking occurs to further complicate the condition.

With the line of weight bearing down the femur to the inner side of the inclined plane of the articular surface was on a much strain, with associated weakness. I have not operated on this patient, but will free the inner tuberosity from its false position by an incision extra-articular, drive this fragment up into line, and later remove the cartilage and the loose tibial spine and replace the knee.

Another case was that of a fracture of the neck of the astragalus in a girl of fifteen, with a resulting deformity and marked loss of function. The foot was functioning in a marked inversion, with the weight on the outer edge of the foot, almost on the edge of the dorsum, as in a typical varus deformity. The dorsiflexion was much limited, but other ankle-joint motions were good.

After making radiographs in various positions and at various angles, it was evident that the astragalus neck was fractured, and the distal fragment or the head of the astragalus was carried upward with the foot in a marked inversion the fragment moving in its relation to the scaphoid, with which the head articulated.

Union in this position showed the proximal end of the distal fragment elevated on the dorsum of the foot, so as to prevent full dorsiflexion, all of which was a disastrous deformity.

As Dr. La Rose suggests in his own paper and in his discussion, it is necessary to take the pictures in various positions before the true cause of deformity can be made out.

It was necessary to cut down through the dorsum of the foot to the projecting corner of the proximal end of the distal fragment, drive the osteotome through the line of union to the plantar soft parts, and remove the bony pieces which prevented the proper replacement of the cut ends.

The thought I want to impress is the necessity for making an accurate diagnosis after studying, in conjunction, the clinical picture and the skiagrams, then the accurate replacement of the fragments, and the placing of the foot in an over-corrected position, then secured by plaster cast, and later gradual functioning with protection by a brace.

One never feels happy until he sees the patient walking comfortably.

DR. H. O. ALTENOW (Mandan): I have nothing to say that is worth while on this subject; I am very glad to have heard Dr. Griebenow's paper, together with the papers of Dr. Callander and Dr. La Rose yesterday. I think that has given us all something in joint injuries that is worth while. The injury to the semi-lunar cartilage that Dr. Griebenow has given us a paper on is not a very uncommon injury, and I am very glad to have heard this paper bringing out this point. I am sure that it will be very valuable to take home with us, we will be more on the lookout for them and will not miss them.

DR. V. J. LA ROSE (Bismarck): I have noticed that the doctor in going over his cases, in speaking of the x-ray examinations in two or three of the cases a shadow could be found. Occasionally in these cases where a loose piece has existed for some time, long enough to become chronic, then there is more or less deposit of lime salts in the loose piece, so that it will cast a shadow, but the fact that the x-ray is negative, of course, has no part in the diagnosis as to loose cartilages.

DR. GRIEBENOW (closing): Dr. Callander has cited an unusually complicated case. As he stated, the best procedure, no doubt, is to treat the fractures first, and to remove the dislocated cartilage later if it is causing trouble.

I have presented this subject because very little has been written about it, although the condition occurs frequently.

A patient came to the office just a few days ago. A small hard body could be easily felt outside of the joint in the subcutaneous tissues. It was situated on the external side of the knee, but the history of the injury and the point of tenderness indicated that it was a dislocated internal cartilage.

The formo-glycerine injections are given for aseptic purposes. We have had no harmful irritation from the solution in our experience.

SYPHILIS IN THE STATE OF MINNESOTA*

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It is the prime duty of health departments to safeguard the public health. How best to do this may be said to depend upon three things: first, the decision of the individual health department; second, the laws governing health mat-

ters; and, third, the amount of appropriation available to enforce these laws. The results of public-health campaigns against tuberculosis, typhoid, diphtheria, and other serious diseases demonstrate the possibilities of prevention. As soon as the medical profession and the public come to realize the prevalence of syphilis and

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

the terrible cost of its later developments, and to further realize that most of its worst consequences can be prevented, just so soon will syphilis be recognized as a public health problem, and adequate measures be taken to cope with it.

In spite of the large literature of recent years, most lay persons and many physicians have very little idea of the prevalence and cost of syphilis. Osler has said that syphilis ranks next to tuberculosis, pneumonia, and cancer from the standpoint of mortality. Gerrish,¹ in 1911, estimated that 10 per cent of the population of New York are syphilitic. Fisher,¹ in 1913, estimated that 18 per cent of the people of the United States are infected. Vedder,² after his study of nearly ten thousand Wassermann tests in the army, concluded that 20 per cent of the young adult male population from which the army is recruited are infected. Church³ has recently estimated that one person in every five is syphilitic.

From these estimates, made from various surveys, we must conclude that there are at least fifteen to twenty millions of people in the United States infected with syphilis. Surveys of hospitals and public institutions also serve to emphasize the prevalence of the disease. Out of 111 cases admitted to a children's hospital in Boston, Lucas⁴ found 31 per cent luetic. In a children's hospital in Chicago, where syphilitic cases were supposedly not admitted, Churchill⁴ found 30 out of 102 patients had a positive Wassermann.

From these figures it is conservative to say that from 10 to 15 per cent, of the population of Minnesota, or from 200,000 to 300,000 people, are infected.

In our University Hospital, where the Wassermann is now done as a routine in almost all services, seven positives were found in one hundred consecutive tests, and the patients are not admitted primarily for syphilis.

In the out-patient clinic for syphilis we have 371 cases registered and under control (October 1, 1916).

According to the report of the Social Service Department, during the months of April, May, and June the average daily attendance on the Monday, Wednesday, and Friday clinics for syphilis was 26, with a maximum of 46. In May the attendance for dermatology and syphilis was larger than in any other department. It was 807; and 597, or 74 per cent, were for syphilis. Thus for the month of May, 13 per cent of the

total attendance in the Out-Patient Department was for syphilis; and this is without making allowance for patients registered in other departments, and not yet referred to our department.

While we can make a fair estimate of the prevalence of the disease in the state it is obviously impossible to draw any very definite conclusions as to what the disease actually costs the State. The legal value of a life in Minnesota is \$7,500, if a person is accidentally killed; but who shall place a value upon lives really needlessly lost through general paresis, tabes dorsalis, aortitis, apoplexy, arteriosclerosis, etc.? What might be the value of the hundreds of lives of stillborn babes if they had been born alive and healthy? What value shall we place upon the loss of eyes, and the partially lost brains of the hereditary luetics?

Blaisdell⁵ has recently made a study of syphilis in the family, and his figures are interesting in this connection. Thirty families formed a basis for the study. Less than ten per cent of the husbands were healthy; 28 out of 30 wives were infected; and the remaining 2 were probably infected. There were 132 definite pregnancies in the 30 families; only 23 resulted in healthy children, the majority of these being born before the infection entered the family. Of the 53 living children 24, or 45 per cent, were definitely luetic; of the 79 deaths 59, or 74 per cent, may be credited to syphilis; in all, the disease claimed 83, or 62 per cent, of the 132 pregnancies. This also demonstrates the high percentage of innocent infections.

There is, however, one source from which we can draw more definite conclusions of the cost of syphilis, and that is in public institutions. It is a well-established fact that this disease is responsible for the presence of a considerable number of their inmates. Surveys in various institutions have shown an average of at least 20 per cent of positive Wassermans. Out of the total number of institutions in Minnesota there are five where we would expect syphilis to be an important factor. These are the asylums at Rochester, St. Peter, Fergus Falls, Anoka, and Hastings. At only one of these institutions are Wassermans being taken as a routine, namely, at Fergus Falls, where the admittances since Sept 1, 1915, show 30 per cent positive.⁶ I shall therefore use what has been the average in many surveys, that is, 20 per cent, in making my calculations. The 1916 report for the Board of Control is just now in the making, and these

figures are not available; the figures given are from the report of July 31, 1914. According to this report there were in these institutions 5,247 inmates; then on the basis of 20 per cent, 1,094 are syphilitic. The average cost per patient per year in the five asylums was \$158.93. From this we can say that \$166,781.24 is about the sum of the taxpayer's money that goes to care for the syphilitic insane each year in Minnesota. A further point of interest is that most of these cases are general paresics; and, generally speaking, paresics do not recover, so that most of this money is hopelessly spent so far as its being of any real assistance to these patients at this stage of their syphilis.

In a few states and cities syphilis has already been recognized as a public-health problem, and campaigns have been started for its diagnosis, treatment, and control. New York and Boston are undoubtedly taking the lead in the campaign against venereal diseases. In New York the work was begun in 1911,⁷ and in May, 1912, venereal diseases were made reportable. Laboratories were established for the diagnosis of syphilis and gonorrhea, services to be rendered free to physicians and institutions. In 1914, 42,415 Wassermann tests were made, and 21,155 cases of syphilis were reported. A so-called advisory clinic was also established. This clinic was advertised just as quack clinics are,—by posters in public toilets and by space in the newspapers. Its purpose is to interview infected persons, and to direct them either to qualified private physicians, if the patients are able to pay, or to a proper clinic. During 1914, 1,427 patients patronized this service.

Several years ago Massachusetts appropriated \$4,000 to be used for laboratory purposes in connection with venereal diseases. This past spring the Legislature appropriated \$10,000 to be devoted to laboratory equipment and maintenance, research, and free salvarsan when necessary.

Vermont passed a law in 1913 making syphilis reportable, and furnishing laboratory service and treatment at cost. In Indiana syphilis is included among infectious diseases. In Michigan it is reportable. In Florida, in 1913, syphilis was included among the diseases concerning which the state health board should issue educational bulletins. Kansas made syphilis reportable in 1913. Iowa passed a law making syphilis reportable in 1913, also providing a penalty for its transmission, as well as making the person liable

for civil damage. In Louisiana and Wisconsin, syphilis is reportable. North Dakota, in 1913, passed a law preventing the marriage of infected persons, and providing a penalty for marrying such a person. In a number of cities, ordinances have been passed, and laboratory service is maintained; among these are New York, Boston, Cincinnati, Buffalo, Mountclair, and Orange, N. J.

Many people will say it is useless to pass these laws, for syphilis cannot be controlled anyway; in answer let me quote the figures of the last report of the Massachusetts General Hospital. During the year 1915, there were 3,358 cases of syphilis under treatment. These patients made 18,063 visits to the hospital, and less than 10 per cent of them were lost. By "lost" is meant a patient who had entered the hospital or was under treatment during the year, and had not reported to the clinic within a reasonable time in 1916,—in other words, over 90 per cent of these patients remain under control in 1916. Our own records at the University of Minnesota show that of 179 cases admitted during 1915, 72.6 per cent were lost, that is were carried into 1916. However, upon reorganization of the clinic with social service 47 patients were brought back, and the clinic has had the high attendance quoted previously, and now has very few lost cases.

Having thus gotten an idea of the prevalence and cost of syphilis in Minnesota, let us attempt to see what the State does in the matter—what provision is made to control the disease or to treat the early active cases. Board of health officials have informed me that there is not a single law on the statute books of Minnesota that makes it possible to handle syphilis as any other infectious or contagious disease is handled. On account of lack of an appropriation the State Board of Health, although, I am sure, it is both willing and anxious, is entirely unable to supply any laboratory service, such as is furnished for typhoid, tuberculosis, diphtheria, etc. For the same reason nothing in the way of treatment can be furnished.

The State does not furnish a single bed in a single institution for the diagnosis, detention, or treatment of an infectious case of syphilis.

The nearest it comes to doing anything for syphilis is supporting the syphilis clinic along with the other clinics of the Out-Patient Department of the University Hospital. This clinic is, of course, primarily a teaching one, and we are

naturally forced to make the public-health phase of it more or less secondary.

A great deal more could be accomplished here if sufficient funds were available, but at present all patients must even pay for "606," no matter how urgently it is needed, whether to save the eyes of a child innocently infected or quickly to clear up a highly infectious case that it may not be a source of danger to the community. The State, apparently, can well afford to furnish residence for the hopeless syphilitic insane for a rather indefinite period, but cannot afford to furnish treatment for early cases, even though it cost no more than 25 or 30 per cent of one year's expense for an institutional inmate.

So far as I know there are no local ordinances in any of the cities of the state which apply to syphilis.

The Minneapolis City Hospital has no beds for syphilis, but occasionally an exception is made and a case is admitted, if it seems quite necessary. Syphilis is treated in the dispensary. Patients must pay for salvarsan if possible; if they cannot and need it badly, it is furnished by some charity or by the Hospital.

Beds for syphilis are available in the City and County Hospital in St. Paul; usually, 25 to 30 are devoted to skin and venereal diseases. Salvarsan must be paid for if possible; otherwise the Hospital or some charity furnishes it to worthy and needy cases.

There are practically no beds available in private hospitals for infectious cases.

Thus it is seen that while Minnesota spends approximately one hundred and fifty to one hundred and seventy-five thousand dollars each year for the care of individuals made dependent on account of this disease, practically nothing is done by way of prevention, although statistics of various observers demonstrate that with moderately good treatment only an extremely small percentage of cases will develop these dreaded sequelæ. I believe it can safely be said that practically every case of late syphilis, whether of the nervous system, the cardiovascular system, or of some internal organ, gives a history of either lack of treatment or of poor treatment.

CONCLUSIONS

Syphilis, from an economic or a sociologic point of view, is one of the greatest public-health problems of the day.

Laws should be drawn placing syphilis in the group of infectious and contagious diseases. Regulation and control should rest with the

boards of health, and a sufficient appropriation should be maintained to furnish adequate laboratory facilities and free treatment if necessary.

Beds should be furnished in all medical institutions depending upon public funds for maintenance, where patients with infectious lesions might be detained until cleared up, and treatment should be not only furnished but obligatory.

A campaign of education should be carried on by the State Board of Health and various medical societies.

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DISCUSSION

DR. H. M. BRACKEN (St. Paul): This paper, presented by Dr. Irvine, is most interesting.

This disease does need consideration, but I hardly feel that it can be put into the group of other preventable diseases. In dealing with preventable diseases from the public-health point of view, we have the primary and the secondary cases. The primary are the accidental infections. We do not know where they come from. The secondaries are the infections from the primaries. There never should be any secondaries, and if there were no secondaries there soon would be no primaries.

When we come to the venereal diseases, we no longer have the primaries and secondaries in the sense as we speak of other diseases, but we have the voluntary, the criminal, and the accidental. The voluntary cases are those where individuals deliberately take chances. The criminal cases are those that result from the marriage of men or women who know they are infectious and should not marry, because they are liable to convey infection to the innocent. The accidental infections are few. The number of criminally infected is comparatively large; the number of voluntarily infected is the largest of the three groups.

From these statements it is clear that we are not dealing with a strictly health problem, but rather with a social problem. If the medical profession will take the position that these diseases should be controlled, it may then be possible for health organizations to do something to help out. The movement demanding protection must come from the people supported by medical facts.

The State Board of Health can make regulations looking to the control of venereal diseases, but there is no use in making regulations unless they are to be enforced.

The point was made that at only one of the State institutions for the insane was the Wassermann test

used. We must remember that but three of these five institutions are called hospitals. These three certainly should make these examinations. The two asylums at Hastings and Red Wing have many patients that have already been in one of the three State hospitals for the insane.

Reference was made to the Wassermann test. I was very glad indeed to have Dr. Greene bring out the point that much must be taken in its use. I am afraid that in some places where boards of health have undertaken to make this test, the findings are not altogether reliable. Boards of health should not be expected to make this test purely as an aid to diagnosis. We should take the same stand here as was taken in Minnesota relative to tuberculosis, namely, that, until it is made a part of the control of the disease, it is not a public-health problem.

DR. CHARLES L. GREENE (St. Paul): May I ask a question? In the course of my reading about this subject I ran across the statement a number of times that infection was more common, to the extent of three and five and six and eight times, in well-to-do persons (private patients) than in public patients. I presume Dr. Irvine has already made some statements in regard to that. The figures varied all the way from one who stated that it was three times as prevalent, which would make an enormous and unbelievable percentage, to one who stated eight times, I think. It seemed almost incredible.

DR. L. G. ROWNTREE (Minneapolis): It seems peculiar that so terrible a disease, about which we know so much and which is transmitted solely by the human, should continue to rage and ravage. The control of syphilis looks like an easy problem: unfortunately, it has to do with human nature. Nature herself is more easy to deal with than is human nature under many conditions. One would expect that man's brain would protect him from syphilis. Unfortunately, man seems to suffer from cerebral insufficiency during times of sexual stress. Cerebration seems to decrease as sexual excitement increases. Nevertheless, I feel that the greatest advances in dealing with the problem of syphilis are to be made through education, education both of the profession and of the laity.

Dr. Irvine has not overestimated the cost or the awfulness of syphilis; and Dr. Hamilton and Dr. Greene have in a masterly way outlined certain phases of the later stages of the disease.

As a State and as a profession we are devoting our attention to the wrong end of syphilis. The State is not putting in a stitch in time. I would like to describe a Pathology Conference which I attended a year and a half ago. There were six cases which had come to autopsy, and in every case syphilis was the underlying cause. In the wards we had been treating general paresis, tabes, cardiovascular syphilis, and luetic hepatitis; and treatment in every instance was unavailing. Unfortunately, the treatment was begun from ten to twenty years too late.

I heartily endorse all of the conclusions to which Dr. Irvine has come, with one exception. I do not believe that ordinances will control syphilis. They have been tried elsewhere, and syphilis prevails everywhere. The board of health should deal with the problem. It should deal with it early, and it should deal with it thoroughly while it is still amenable to treatment. If

laws are enacted, we must be extremely careful that these laws do not drive patients away from good counsel and good treatment into the hands of charlatans.

I would like to say one word of appreciation of the splendid work of Dr. Irvine and of the other men at the University Hospital who are interested in the problem of lues. I want to call particular attention to a phase of the work which has not been emphasized sufficiently heretofore and which has proven most valuable,—that is social-service work in dealing with syphilis. The social-service workers have been responsible in part for the splendid showing which the University Clinic has been making in relation to syphilis. It can be applied on a much larger scale than it has been in the past.

To my mind, then, in dealing with the question of syphilis, the important things are these: First, education, a propaganda of education in relation to syphilis, and this should involve the profession as well as the laity. Second, early diagnosis and treatment, the importance of which has been emphasized by both Dr. Greene and Dr. Hamilton. In this the State should participate, and at the early stage of syphilis when it is amenable to treatment. Third, I believe that sufficient appropriations by the State should be at hand to make possible an educational campaign and early diagnosis and treatment in all cases.

DR. C. F. DIGHT (Minneapolis): While listening to Dr. Irvine's paper I recalled the statement that one person out of every five in the United States suffers one way or another from syphilis. I was impressed with the fact that it is one of the diseases which during one or the other of its stages should be made reportable to the State Board of Health, and, while we have no legislative action which requires it, knowing what I do of the powers and duties of the Department of Health of Minneapolis, I believe it is quite possible to have an ordinance passed by the City Council requiring syphilis to be reported to the State Board of Health. I want to say to Dr. Irvine that as a member of the City Council, I will be glad, indeed, to aid him or any one else in presenting this matter as it might be and as it should be presented to the City Council.

If we should not succeed in having an ordinance passed requiring that syphilis be reported, I know that it would be very educational and would help along in that way.

DR. E. J. BROWN (Minneapolis): I am glad to learn that the responsibility for the non-reporting and for the non-regulation of syphilis in Minnesota is due to the fact that the profession in general and the State Board of Health in particular have not risen to their opportunities.

I believe that syphilis can be regulated and controlled. While efforts have been made in many places with only a modicum of success, the lack of success has probably very largely come from the fact that physicians have refused to report their cases for fear of losing their patients.

Australia has lately passed very drastic legislation for the control of syphilis. Cases must be reported, but not by name. It seems to me that that is the great advantage and force of this legislation. And if our State Board of Health would provide for the reporting of all cases of syphilis, not by name, but in such a way that those cases could be controlled, and, if necessary,

as in Australia, brought under the control of the State Board of Health, much could be accomplished.

DR. JOHN C. BOEHM (St. Cloud): I listened with great interest to all the papers, and a good many points have been brought out which I did not know.

The discussion now is how to control syphilis. It was suggested that the State Board of Health take a hand in this, that the municipality should pass an ordinance, and that the State perhaps should pass laws. All of this to my mind has some bearing. But when we remember the usual way that syphilis is contracted—I speak of active syphilis, not hereditary—we find a stumbling-block right there. How many persons would come to us and have us treat them if they knew we would report them? Just answer that for yourself. The only way that I see that we can control this is by education, by education in the schools, in the higher branches, education, if you please, in the churches. I think that is where it should start and from the standpoint of the profession. I think the State should appropriate a certain sum of money so that those who cannot afford to pay for the necessary medicine such as salvarsan (I do not know whether that is any good), it should be available.

It was stated in one of the papers that, on the part of the father or on the part of the mother where there was no abortion, syphilis was excluded. I wish to go on record as asserting that of two personal male friends of mine who knew they had syphilis, one raised a family of eight and the other raised a family of ten, without a single death, and not a single abortion; and, so far as the children are concerned, they look as healthy now as any other children.

DR. IRVINE (closing): I feel very much gratified that my paper has provoked a considerable amount of discussion. The principal object of the paper was simply to call the subject to the attention of the medical profession. I believe very heartily that the most important thing to do is not to have laws and ordinances passed, but to educate our own profession. We are perhaps more negligent in that one phase than the public themselves. The public has no source of information but us, and there is no question but that a great many of us are extremely lax in telling our patients anything about this disease and its terrible consequences. I think it is certain that, just as soon as the required amount of publicity is given to this disease and its cost, there will come a demand from the public which will bring forth the money from the Legislature.

A recent example of that, I think, can be cited in the excitement over infantile paralysis. There were only somewhat over a hundred cases before the clamor of the public had brought forth an appropriation of five thousand dollars to look into this matter by the State.

Now, just compare the one hundred or two hundred cases with two or three hundred thousand cases of syphilis, and nobody says a word about it.

I think Dr. Greene's question, as to whether syphilis is more prevalent among the well-to-do or the poor, is one which is extremely hard to answer. In private practice we probably find it more common among the well-to-do, but the better educated people are more able to take care of themselves, while the poorer classes are less likely to take care of themselves because they have less money to pay for treatment.

In answer to a remark of Dr. Bracken's, as to the control in the army and navy, I believe there has been one great criticism made, and that was the withdrawal from the navy of the prophylactic package by order of Secretary Daniels. It is not possible to see that the men use this prophylactic package. Under the use of the prophylactic package and education in the matter of venereal diseases, such diseases have been reduced in the navy and the army to something like two to two and one-half per cent. That is a very large factor. In 1912 there were 147,787 sick days in the navy on account of venereal disease, enough to totally disable a dreadnaught using a thousand men for a period of five months.

As to the treatment by mercury or salvarsan; that is a very important point. There is no question but that mercury is needed just as much as salvarsan. They both have their place. The final place for salvarsan is not yet determined. It probably will not be for many years. In our clinics at the University we use both, and probably use a great deal more than is used by the profession in general. We should get away from the idea that two or three doses of salvarsan or neosalvarsan are anywhere near enough to cure a case of syphilis.

I desire to cite one case that recently came to my office to inquire from me how to get into my clinic. A young woman who was working for five dollars a week had gone to a physician the week before, and he had agreed to cure her for whatever she could pay for one dose of salvarsan. With the idea that she was going to be cured with this one dose she scraped up fifteen dollars and paid him that. I think the medical profession is to be censured for the existence of that sort of thing. If a patient is in such condition that he cannot see his way clear to pay for a sufficient number of treatments, the least we can do is to see that such patients are referred to a clinic where they can get enough treatments to do them some good, and not be allowed to pay for a little like that, and then be turned loose, not knowing where to go and without a cent to pay for further treatment. It is that sort of thing that fills our asylums today with patients who have received only a little treatment at a time when treatment could have accomplished something.

THE SCHOOL NURSE*

BY MARY ALBERTA BAKER, R. N.

LA MOURE, NORTH DAKOTA

Any encyclopedia gives information covering the origin and development of medical, surgical, and sanitary knowledge among the people. The most casual reader is aghast at the ages that have passed since the world first recognized a wrong attitude toward life and the degree of correction that has been applied to the evil. When reading of the provision made for the care of citizens and soldiers, as well as for the insane, by Egypt, Persia, Greece, and Rome, the conviction is forced upon us that the amazing ignorance we encounter everywhere today will never be eliminated until a complete organization of the State brings the knowledge that is now the possession of brilliant bacteriologists, scientists, and medical men into the homes and daily practices of the women of the nation.

Until we get away from the idea that the status of our women is an inspired one, I feel we are not touching the root of their trouble or the real trouble of this world. If we accept the condition we find as thoroughly bad, realize it is the actual result of ages of vicious and illogical thinking, and determine to educate our children into an attitude of mind that will refuse to accept any condition that does not consider the whole social group in a community, then we shall surely bring about a radical change. When we read that the first health officer in Great Britain was appointed in 1847, it means very little. When we remember that Rome had several medical officers in 500 B. C. we are impressed as to our shortcomings. Twenty years ago a progressive Englishman said, "I wish to impress it upon you that the whole future progress of the sanitary movement, rests for its permanent support upon the women of our land."

As nurses we are awake to the fact that we have a definite work to do for this generation, and that our way lies along the life of every woman through her children, the public school, and the home. Logically following the present day concept of conservation, the emphasis is being placed more and more upon the prevention rather than the cure of human ills, and this includes all the factors of environment that affect us mentally or physically. Here the public-health nurse is doing an essentially different work from

the private duty or institutional nurse familiar to all doctors. Her work is the opposite of such curative work. It is rather preventive and educational. Should occasion call for the service of actual nursing care, this is of course given, but the work to which she is dedicated is a step higher than merely relieving pain as a nurse. It is preventing suffering, when, by intelligent teaching and help, such a thing is possible. We know that the home cannot protect the children if the world outside the home does not afford equal protection from vice, filth, disease, and overwork. We know definitely that moral and physical disease will penetrate the best guarded home and aggressively attack it. A recent survey made in New York tells us that 90 per cent of illnesses are cared for in the home. Dr. Hibbert Winslow, of the Minnesota State Board of Health, says that every generation suffers anywhere from one hundred to three hundred million attacks of infections, costing about ten billions of dollars, with disability and death, and that 95 per cent are nursed at home. Is there any question about there being work to be done? Now, we are everywhere beginning to realize, more or less clearly, that to protect ourselves we must protect our community; and our social conscience expresses itself either in relief and progress or indifference and neglect.

The incomes of our people range from eight hundred to one thousand dollars a year. Gratuitous, efficient medical and nursing service was the first idea embodied in district visiting. Our present civilization will apparently continue to make this necessary. We have long gotten away from the confinement of that idea, however, and are now organizing forces that will take care of that great army of people who are not in any sense asking help of their fellows. From private philanthropic enterprise, we are everywhere asking that the State, under varying systems, give this vitally necessary protection. We long ago accepted State supervision of water, milk, and food supplies. We expect to have shops, dairies, hotels, factories, etc., inspected, the community and workers safeguarded. In these days of enlightened social conscience we denounce a man who is guilty of the exploitation of women and children. All over the country the demand is becoming insistent that the State provide an ade-

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

quate organized protection of the public health, and provide, as its logical complement, the work of a full-time health officer who is interested and trained for modern health administration, and competent public health nurses.

Before considering the subject of the school nurse, as she is an evolutionary product, this must be touched upon. The work of Mr. William Rathbone in 1849 at Liverpool, the swift adoption of his district system in Liverpool, and its phenomenal spread over England, the development of the idea in the United States, and the sweep of the movement at the present time are all more or less familiar.

In New York, the New York City Mission in 1877 was the first to employ a Bellevue nurse in this district service.

Cincinnati claims first place in public-health nursing by having employed in 1881 a visiting obstetrical nurse. Until 1890, eleven years later, there was no expansion. Christ Hospital then organized a visiting service and covered medical, surgical, and contagious work as well.

It is only twenty years ago since Boston, as a result of her compulsory education law, introduced medical inspection of school children. New York City followed in 1897. In 1902 under improved political conditions, the fact was made public that trachoma was so widely prevalent as to exclude thousands of school children. The well-known Nurses' Settlement on Henry Street, opened in 1893, having records of conditions among school children coming under their care, presented its findings to the Board of Education and Board of Health, offering the service of one of its nurses, Miss Lina Struthers. This was accepted, and one month's trial made it clear that the exclusions for minor contagions and trachoma could be controlled by a school nurse. The doctor referred them to her for necessary treatment. By such a system, supplemented when necessary by home visits and instruction, the time actually lost was reduced to a minimum. In October, 1902, thirty thousand dollars was voted for the employment of 27 trained nurses, the first municipalized nurses in the world. This logically developed into the New York City Bureau of Child Hygiene. The New York Department now employs 650 nurses, and a large proportion are working for this Bureau. As a sequence to this work the defective, the crippled, the underfed child, and the child needing vocational guidance have all given the school nurse who has initiative a prolific field for practical

service. In 1907 eight cities, and in 1910 eighty cities employed them.

You are, of course, familiar with the fact that today, for example, Ohio cities are so well organized that the work has spread to the rural districts, and that there are now sixty public health nursing centers in the state, ranging from one to one hundred and thirty nurses to the field, with Cleveland the largest.

Minnesota has twenty-six towns and three large cities employing visiting nurses, most above five thousand and a few below two thousand. In New York and Brooklyn there are one hundred and twenty-two organizations with nine hundred and forty-two nurses doing visiting nursing.

There are two thousand and sixty-six organizations in the United States, with a total of four thousand, eight hundred, and ninety-five nurses. Today a nurse may take the people of the world for her field, as a nurse, a teacher, social worker, or missionary. The knowledge of her community, the product of a trained mind and a loving heart, gives her the power to do a work for prevention and welfare never before in woman's hands.

The term *public-health nursing* is applied today to visiting-nurse work, child welfare, tuberculosis, and factory nursing, and social-service work. This may include sanitary inspection, the work of a truant officer, visiting dietitian, etc. All of this gives her opportunity for educational work along preventive lines.

Poor doctors and nurses share equally criticisms as to the value of inspection of school children. Statistics are necessary, but are certainly not the criterion. The ideal system is unquestionably a specially trained doctor and a specially trained nurse. The assumption that in the absence of such efficiency in combination a general practitioner must be the best available, is not borne out by the testimony of experts. Dr. Rich. Waterman says, "The health movement in this country aims to preserve and protect the health of one hundred million people. It is carried on by different agencies, public and private, and costs an enormous amount of money every year for current expenses." Dr. Eugene Kelly, of Massachusetts, says, "There is no doubt whatever as to the value of public health nursing as a part of the routine work of State Health Departments." Dr. C. E. A. Winslow says, "In the modern movement for the protection of public health, the visiting nurse is the most important

figure." Dr. Clinton B. McCord says, "The nurse stands today the most helpful single agent in any campaign for the improvement of health conditions in the schools of our country. And since education as a science accepts health as the foundation of all training that is worth while, the day of the school nurse is just dawning."

Dr. C. J. McGurran says, "I believe a county public-health nurse can accomplish more along this line than any other agency."

If a school or community cannot afford both a doctor and a nurse, it is the verdict of trained sanitarians that a school nurse can secure more real result working with the local doctors than can a doctor working alone. Dr. McCord says, "In my opinion there is no argument. She stands today as the single most effective instrument for success, either in urban or rural systems." And further, "School nursing, I believe, is the most important department of rural nursing."

The nurse should know all an efficient, educated nurse trained in a first-class school is expected to know, and should understand the general philosophy of health work as a part of education. Massachusetts passed a bill authorizing school nurses to make examinations of eyes and ears. Before this was done a committee of specialists was asked to investigate and report upon its advisability. They reported "that a trained nurse, after she was shown, could use a 'Snellin card' and give the 'watch test' in a school inspection, with greater accuracy, especially to younger children, than will the average physician, unless he be a specialist along these lines."

States and municipalities show a growing tendency to take under control all public-health nursing. New York is placing all visiting nurses under state supervision. The Ohio State Board of Health also has a plan for county and local visiting nurses in connection with a joint board of members of the State Board of Health and the Anti-Tuberculosis Association. The State Board of Health has forty-two county, district, and municipal nurses reporting. Minnesota intends to organize county and tuberculosis work by affiliating each local organization with the Rural Red Cross.

Wisconsin's Anti-Tuberculosis Association has gone into the real rural districts and intends to place a nurse in all communities that maintain a church and preacher. All this tends to show that the outcome will be State control of such machinery for the public welfare.

The statistics of Dr. Thomas Wood, of Columbia University, proved that a vine-clad cottage or a farm house upon the boundless prairie does not compensate for a lack of proper sanitation and hygiene. In addition "that the science and art of human living, of conserving and improving human health, and general human welfare have advanced much more rapidly in the cities than in the country districts." Thus, intensive work has rather shifted from the organized cities to the unorganized rural field. This requires a knowledge of rural sociology as well as of rural sanitation and economic problems. Philanthropy has little place in our country life. It is the farmer who pays the bills for all the conditions of life that surround his family's welfare.

The Health Committee of the National Council of Education, in co-operation with the Corresponding Health Committee of the American Medical Association, has issued a practical program, covering eleven measures recommended as a solution of the serious and widespread unhygienic conditions under which our ten million school children are attending rural schools. It is as follows:

1. Health examination and supervision of all school children.
2. Dental examination and dental care for the teeth of all school children.
3. The service of the school or district nurse to provide the practical health service and follow-up work, which, it has been so clearly demonstrated in our cities, can be best accomplished by the school nurse. The work of the nurse is even more vitally important in rural than in city schools.
4. Warm school lunches for all children in rural as well as in city schools. The indirect educational benefits of the school lunches upon the children and the homes are even more important than the immediate health improvement of the children themselves.
5. Correction of physical defects which are interfering with the health, the general development and the progress of rural children. For this remedial and constructive health service, practical rural equivalents of medical clinics, dental clinics, and community health centers of the cities are urgently needed in all parts of the United States. The county unit of organization and administration for health as well as other rural interests has already proved successful, and promises the best results. Every county should have one full-time health officer, one or more

school and district nurses, and one or more community health centers to provide rational, self-supporting health and medical service for all the people.

6. Co-operation of physicians, medical organizations, health boards, and all other available organizations in the rural program.

7. Effective health instruction for the rural schools which shall aim decisively at the following results: *a.* Establishment of health habits and inculcation of lasting ideals and standards of wise and efficient living in pupils. *b.* Extension of health conduct and care to the school, the homes, and the entire community.

8. Better trained and better paid teachers for rural schools, who shall be adequate to the health problems, as well as to other phases of the work of rural education.

9. Sanitary and attractive school buildings, which are essential to the health of pupils and teachers.

10. Generous provision of space and facilities for wholesome play and recreation.

11. Special classes and schools for the physically and mentally deficient, in which children may receive the care and instruction requisite for their exceptional needs.

Better health is to a striking extent a purchasable commodity and benefit. The principle of thrift in education finds its first and most vital application in the conservation and improvement of the health of the children.

We have in North Dakota at the present time, medical inspection in Barnes County done by the county health officer as a personally selected field for his official activities. He has mileage, livery, and five dollars a day. His report will be ready in September. Would that we had more like him.

Morton county has medical inspection done by the doctor. I have no knowledge of the financial arrangement.

La Moure and Williams counties employ a nurse who includes inspection of schools and children in her work, instead of a deputy superintendent of schools. The La Moure nurse costs less than the deputy, as she has no mileage and is employed for ten months only.

Grand Forks pays its county nurse's salary out of the county budget as other officials are paid, and allows a complete expense account. The criticism is made that this is illegal.

The Fargo and Grand Forks Boards of Edu-

cation employ school nurses, and they are paid as are the teachers.

The Fargo Associated Charities employ a visiting nurse, and the Grand Forks Board of Health and Associated Charities employ another.

There is also a nurse on the staff of the Extension Department of the Agricultural College.

Valley City Normal has had inspection of all pupils in its model school for years, but has never tabulated its statistics.

Doctor Fannie Quain tells me that there is no nurse doing antituberculosis work in North Dakota.

Correspondence has failed to reveal any health-center work, industrial welfare, or infant welfare organized.

The number of nurses doing public-health work totals eight, with the schools of Grand Forks, McHenry, Barnes, and Bowman counties having one school doctor for each county. Several towns have had medical inspection, and the movement is developing very rapidly.

The very considerable influence of the State Anti-Tuberculosis Association and the Health Committees of the Federated Woman's Clubs has done much to bring the matter before the rural public.

Dr. G. F. Drew assigned me this subject and suggested that as one of my topics I discuss "the question of the legality of raising money for the work under the present law, and to suggest changes in the law that I might consider advisable." This is a very large topic for consideration by a busy nurse actually in the field of county nursing and not heretofore considered a shining legal light. Though flattered, I referred the question to the Hon. Henry Linde, of Bismarck, and will quote from his reply:

"The powers of the Board of County Commissioners are purely statutory and are necessarily limited by the provisions of our statute, together with those implied powers which are necessary to carry out and perfect those expressly given. I find no authority for the appointment of a county nurse nor for the payment out of the general fund for such services. Of course you will understand that the powers of the Boards of Education in cities are entirely different, as they are given express authority along this line. I should therefore say that counties are without the power to appoint or pay a nurse for public-health purposes."

In the face of this opinion, the change in the law that I consider advisable is obvious. In

cities where she works with a trained medical inspector, a nurse's work is made easy. If she has agencies to which she may correlate or affiliate, if there is machinery to combat the conditions found, the right woman cannot fail to prove by result her community value. A nurse coming into an exclusively farming country, covering from thirty to fifty townships, sparsely settled, no dispensaries or relief agencies, few doctors, and these often inaccessible, having no opportunity to meet them personally, takes it for granted the rural men are her most dependable support. If she is to secure the good will of the country people, she must have a loyal, vigorous backing from everyone. Employed by agencies other than doctors, her presence is a necessity which has to be proven to them occasionally before her work will be given the co-operation she must have to carry it on.

The county nurse works in a very careful, ethical way. She of course makes no diagnosis. She routines children for defects, and tries to secure relief by inducing the parents to call in the family or county doctor. She should be familiar in a general way with the symptoms that indicate any deviation from the normal. She instructs as to general and personal hygiene. She advises as to food and exercise. She advises as to care and disposition of suspected contagion and tuberculosis cases, and carries out the proper procedure. She endeavors to plan for the best interests of the feeble-minded. She continually works for infant welfare. She inspects school buildings and their surroundings, and urges compliance with the law. She could be the most efficient helper a part-time health officer could have, as an assistant sanitary inspector, and is often used, if trained in this way.

She gives helpful advice to rural teachers, and secures, if it can be done, necessary repairs and supplies from her board. She visits the homes where it is possible, and holds mothers' meetings where these can be arranged. She urges hot lunches wherever conditions permit it, and the need of free play in the schools. She talks and endeavors to secure the interest and co-operation of her community wherever she has the opportunity, at Farmers' Institutes, Teachers' Conventions, Federated Club meetings, etc. The organization of health leagues, hygiene contests, and the little mothers' clubs, brings about a result that stands for a more efficient citizenship. The organization of classes in Red Cross Nursing among the adults tends to community efficiency.

She must never forget "that an ounce of persuasion is worth a pound of coercion."

Where there is one county officer and a small or inactive county medical association, with little interest in her work and occasionally antagonism, a nurse is badly handicapped. She cannot work at all except her method be supervised by a medical man, and he be actually responsible for all procedures carried out by her as routine. It is essential that her county health board approve the literature she distributes. She must have an abundant supply of this educational matter. It should be supplied by the board of health. Oral instructions are incoherent, and should be avoided. He should be asked to approve the school treatment of such minor contagions and ills as pediculosis, ringworm, favus, impetigo contagiosa, scabies, and molluscum contagiosum, small infections and wounds, and the taking of cultures. He should prescribe the treatment he wishes instituted as routine in the county schools, carried out, of course, only with the parents' consent. This is not always done. In remote districts the wisdom of this is obvious.

If one has the hearty co-operation of the county medical society, the county commissioners are very apt to endorse her work and plan for her some practical organization after her first year of survey and demonstration work is completed and its results summed up. It is not what the nurse does that proves her value; it is what her community does because she works in that community, that counts.

Until the State takes over their supervision, there is no form of organization for isolated communities which can compare in value with the Red Cross Town and Country Nursing Service. This is recommended in Bulletins No. 105 and 106, United States Department of Agriculture. It gives the best organization, methods, and supervision that can be provided. Kent County, Michigan, has demonstrated that for the county commissioners to affiliate directly with the Red Cross, gives a most satisfactory result. This provides a supervising committee of the commissioners and school superintendent, and at once places the work on a proper basis ethically and financially. It gives the nurse a definite relation to the local health officer and insures his receiving reports.

This work is intensely practical. It requires a strong trained woman of great common sense and diplomacy. It requires the enthusiastic approval and emphatic co-operation of every phy-

sician in the county. It must have sufficient financial support and transportation given. If there is to be any clinching of results, transportation must be provided, as the follow-up work is the crux of the whole effort put forth.

With six months of winter, poor roads, one train a day, and much inaccessible territory, employment for ten months of the year is not adequate.

If unable to secure twelve months' service, the work should be discontinued during January and February, as is done in the mountain work in North Carolina. July and August should find the nurse in the field of active service.

She is confronted with a lack of sensitiveness to bad sanitary conditions on the part of teachers, as well as school boards. Children need to have emphasized again and again the facts taught by the school nurse, or the result is doubtful. These need to be heartily endorsed by doctors and parents, or result is hopeless. One nurse for from three to six thousand children in a North Dakota county cannot do much intensive work, but the reaction of her large community should be very definitely for better things.

Criticisms of the school nurse and her work are many and curious. One school official was indignant at "the brazen way the American Medical Association holds the whip over the people, and sends a nurse to tell the children what to eat and when to take a bath." An intelligent lawyer said, when a notice was sent him, that perhaps medical advice could improve the nutrition of one of his children, and "that he considered this advice an invasion of the sanctity of the home and a personal affront." Another officer stated as his firm conviction that the doctors were providing the funds to carry on this work and provide the rewards given in the hygiene contests. And, of course, the assertion is often made that she is employed only to send cases to certain doctors and dentists. She is accused of making diagnoses, and then has notices returned for "more definite information" by her doctors.

I have no statistics available as yet. I shall make my report in June to the local health officer and to each township board. There being no machinery available for the correction of these

defects other than parental care, one school board secured the services of an eye specialist to corroborate my findings of suspected eye contagion. I found seventeen; he found nine more, and the doctor now holds a clinic twice a week and treats forty infected in that community. To care for such an outbreak there is no State aid, either expert diagnosis or funds for treatment. Being only little children, they get no protection in this State. Compare this procedure, or lack of it, with the prompt action taken in North Dakota with a case of hog cholera.

For the present, I think, an effort should be made to secure from all persons engaged in work, including physical inspection of school children, a uniform system of keeping records. It is a fatal error to engage in a new work and make statistics of little value, because there is no proper system of keeping records. We should have legislation enacted giving legal power to county commissioners to divert moneys for preventive health work. A routine method of procedure should be agreed upon by the county medical society to the end of securing their active support for the nurse's work. The county employing her should affiliate with a public health organization, preferably the Rural Red Cross Service. The nurse should be used by the county, where possible, to do work that will be a nucleus of a public-health center in that county. Finally, the rural teachers should be given in all normal and high schools a thorough grounding in the principles of hygiene, sanitation, bacteriology, and the detection of common contagion. They should be emphasized by the county health officer, maintenance of their school plant, and this teaching should have practical instruction in the manner on every possible occasion, such as their annual meetings, and teachers' institutes and by the distribution of instructive literature.

This is a transition period, and I confidently look forward to the rapidly approaching day when North Dakota will follow the plan mapped out in older communities and include in a scientifically organized plan of public work, such as is outlined by Dr. Carroll Fox, the logical complement to such a plan, a corp of specially trained, efficiently supervised public-health nurses.

BLOOD-AGGLUTINATION: METHODS AND CERTAIN EXPERIMENTAL CONSIDERATIONS*

By J. R. TURNER, M. D.

TACOMA, WASHINGTON

I will present, first, certain simple methods, lately developed, for the testing of blood-agglutination as done preliminary to transfusions.

The simplest method, first devised by Rous and Turner¹ and subsequently modified by Minot, is as follows: There is prepared a 1.5 per cent solution of sodium citrate in normal salt solution. Three or four drops of this is placed in each of two short, small test-tubes. From a prick in the ear or finger there is collected into one of these tubes one drop of blood from the donor and nine drops from the recipient. Into the other there is collected one drop from the recipient and nine from the donor. Or one drop of each into each tube may be used, with two drops of the citrate solution. After the mixtures have been shaken, and allowed to stand for fifteen minutes, they are examined microscopically for the presence of agglutination. To do this, a drop from each tube with a drop of normal saline, is placed on a slide, and a cover-slip is superimposed. If there is no agglutination, the red cells are discrete; if agglutination occurs, there are numerous clumps of red cells massed together, which may appear as many small groups or as several large ones.

If agglutination does not occur, the two specimens of blood are in the same group and satisfactory for transfusion. If agglutination occurs, they are, of necessity, in different groups, and not suitable for transfusion.

You will recall that human blood may be divided into four groups according to the agglutinative reaction. I have given in Chart I the classification according to Moss.³

All adult human blood can be classified under this grouping. The group to which an individual belongs is an inherited, permanent characteristic.

There has been developed by Minot² at the Massachusetts General Hospital a method by which it is possible to keep on hand a list of suitable professional donors. The grouping of these persons is previously determined. Serum of groups two and three is kept stored in an ice-chest. When it is necessary for a patient to be transfused, his blood is collected in a dilute

solution of 1.5 per cent citrate in normal salt solution—namely, a few drops of blood to a few c.c. of the solution. The red cells are then tested against the sera of groups two and three, by mixing one drop of the cell-suspension with one drop of the serum. After standing fifteen minutes a reading is made microscopically.

A consideration of the table will show how the patient's group may be determined. If he belongs to Group I, his cells are agglutinated by sera 2 and 3; if he belongs to Group II, they are agglutinated by 3; if he belongs to Group III, they are agglutinated by 2; if he be-

	Group I Red Cells	Group II Red Cells	Group III Red Cells	Group IV Red Cells
Group I Serum	0	0	0	0
Group II Serum	+	0	+	0
Group III Serum	+	+	0	0
Group IV Serum	+	+	+	0

CHART I

longs to Group IV, they are agglutinated by neither of the sera. The group thus having been determined, the donors of a corresponding group are sent for.

In a similar way, by reference to the table, if one has on hand both cells and serum of either Group IV or III, by using both cells and serum of the patient, it is possible to determine his group.

It seemed to me that it would be of interest to determine whether the red cells, as well as the serum, retained their normal characteristics for any length of time.

Considerable work has been done indicating that red-blood cells retain evidences of life when stored outside the body. Abel, Rowntree, and

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

B. B. Turner⁴ found that dogs could be bled repeatedly of large quantities of plasma provided that the red cells were immediately restored to the circulation. When so restored, they seemed to functionate unimpaired. Rous and Turner⁵ carried the work farther by preserving the cells for a considerable length of time and then using them for transfusion purposes. They found that considerable damage was done the cells in washing them in salt solution. This they prevented by using a colloidal washing fluid, namely 0.125 per cent gelatine in Locke's solution. They then attempted to develop the best possible preserving agent. Their results in brief are as follows:

For sheep, the best agent is 2.8 per cent saccharose in Locke's solution. Cells preserved two months.

For human beings, 4.9 per cent saccharose in Locke's solution. Cells preserved four weeks.

For rabbits, a mixture of plasma, Locke's solution, and sodium citrate. Cells preserved two weeks.

For dogs, 2 per cent dextrose, 2 per cent dextrin, and Locke's solution. Cells preserved five to twelve days.

Finally, a simple method for avoiding the washing of the cells was devised. A solution containing two parts of isotonic sodium citrate (3.8 per cent in water) and five parts of isotonic dextrose (5.4 per cent in water) is prepared. Into this mixture is placed three parts of blood. Human cells so "kept" remain intact about four weeks.

It was found that these preserved cells were not hemolyzed; they appeared quite normal under the microscope, and took up and gave off oxygen in a manner similar to fresh blood. Further transfusion experiments were done to determine their viability.

In a sample chart I will indicate the results obtained. For the transfusion the blood of two rabbits was used, the blood having been kept twelve and fifteen days, respectively. A rabbit was put on the operating-board. Two bleedings were done (40 and 50 c.c.) and two injections made. About 64 per cent of the total hemoglobin was thus withdrawn, and more then replaced.

This chart shows the results:

Time before or after transfusion	Red-blood cells	Hemoglobin
One day before.....	4,860,000	68 per cent
Just before.....	4,790,000	65 per cent
Three hours after....	5,670,000	81 per cent

One day after.....	5,220,000	76 per cent
Two days after.....	5,280,000	73 per cent
Four days after.....	5,360,000	75 per cent

There seems to be little doubt that human cells could be as effectively preserved. Weil has reported cases in which transfusion in human be-

Length of time cells were kept	Agglutination M vs. K	Control M vs. M	Control K vs. K
1 day	++++	0	0
2 days	++++	0	0
3 days	++++	0	0
7 days	++++	0	0
11 days	++++	0	0
16 days	+++	0	0
20 days	++	0	0
24 days	++	0	0
30 days	+	0	0
34 days	++	0	0
38 days	+—	0	0
40 days	0 or ±	0	0

CHART II

ings has been done with cells kept for several days. He used 1 part of a 10 per cent sodium citrate solution to 10 parts of blood.

I will show to you by means of a table the results which I have obtained showing the duration of the agglutinative phenomenon in "kept" cells. The agglutination method which I used is the simple one described in the first part of this paper.

I found, first, two strongly agglutinating bloods, which are labelled M and K in the table. These two bloods under sterile precautions, I stored in the isotonic dextrose citrate solution, placing a small amount of the blood in a number of small test-tubes. From day to day I obtained fresh plasma from the two patients. This was done by simply collecting a small amount of blood in 10 per cent sodium citrate solution. After centrifuging, the plasma was easily pipetted off. The kept cells were washed twice in a large quantity of salt solution. Then a drop of the cells was suspended in a drop of the plasma.

In this way I had two suspensions: M kept cells in M fresh plasma, and K kept cells in K fresh plasma. The agglutination reaction of the two mixtures was then determined. The results, with proper controls, are shown in Chart II.

This indicates that the agglutination reaction remained strong for over two weeks and then gradually decreased, finally disappearing on the fortieth day.

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DISCUSSION

DR. A. H. BEARD (Minneapolis): I have not used to any great extent Dr. Turner's method. I used Turner's method once with very satisfactory results. Otherwise all my knowledge of blood-agglutination is with a modification of Moss' old method.

In the Massachusetts General Hospital we have a rather unique situation. They have what we call "professional donors." These donors are students in the undergraduate department at Harvard University, and, if necessary, they give their blood on an average of once every six weeks for the small sum of fifteen dollars. With every new donor a specimen of his blood is taken for a Wassermann test and a few cells are placed in citrated saline. We keep our stock serums on ice and group the citrated cells accordingly, the cells being the unknown suspension and the sera being the known groups. This saves time, because all that is necessary when we have a patient requiring transfusion, is to look at the files, and if we find a donor of a negative Wassermann reaction belonging to the same group as the patient, we send for him, and the transfusion is done immediately.

In reading the agglutination reactions there are two or three things to be considered. One of the greatest dangers is the rouleau formation. Anyone who has made many smears of blood has often seen the cells pile up in a certain coin-like arrangement. If you have

too thick a suspension of red-blood corpuscles you will get the same thing in reading the agglutination reaction. It is only necessary to know that this is not a true agglutination and is the result of concentration of the red-blood cells.

Many people feel the test should be read after a longer period than fifteen minutes. Turner and myself have read the agglutination reaction at the end of fifteen minutes, and again at the end of an hour. We have never seen any variation in the two readings. I understand there has been a case at Johns Hopkins in the past two or three years where the agglutination reaction did not appear until five or six hours after the suspension had been set up; but at the Massachusetts General Hospital we have had no such case.

I was rather surprised at the experimental work of Dr. Turner, that the red cells kept in the citrated saline when transfused in the rabbit remained intact so long. We know that in transfusion after pernicious anemia, if the bone-marrow is not stimulated by the red cells which are given at the time of transfusion, the red count returns to its former level in from about four to seven days. In his work on rabbits he found the citrated cells remained intact, just as well as the fresh blood. We had the impression in our clinical work that the citrated red cells did not last as long as the blood which was taken directly from the donor to the patient.

Dr. Turner's work gives the possibility of keeping citrated blood on ice for months, and as the demand arises using the stored cells for our patients instead of calling for a donor each time.

DR. E. L. TUOHY (Duluth): I wish to discuss, briefly, this very important matter of blood-agglutination.

It is important because blood-transfusion is becoming more and more popular. I am not sure that I have understood, in its entirety, the working method advocated and developed by the essayist. We have been following the technic as originally outlined by Moss and modified by Bren. My attention was first drawn in a practical way to the matter of blood-transfusions by seeing the clever work of Dr. Percy of Chicago. Later one of our staff went directly to the Augustana Hospital, and his class was determined in their laboratory.

This working plan has many advantages. Any prospective donor can readily be classified from this known subject. Having classified the donor, or prospective donor, his name and address can be taken, whether he be used or not. Having a number of these classified and indexed, it is usually not difficult to find a donor promptly when needed.

At the present time, it is certainly a mooted question as to whether one form of blood-transfusion is better than another. It would seem that any method which enables the transfer of a definite amount of unchanged blood, without too great difficulties in technic, is better than any form requiring the dilution of the donor's blood. At the same time, if any considerable portion of the donor's blood is likely to be lost in transfer, either through faulty apparatus or faulty technic, this represents a considerable disaster. Kinship, except as it applies to mother and child in the first years of life, has no bearing on the suitability of donors.

The large paraffin-lined tubes work very well with those who are familiar with the technic and are in the habit of using them. It would seem, however, advis-

able to have the citrate solution available for more leisurely administration by ordinary intravenous injection with the needle, should any unusual obstacles be encountered.

Blood-transfusions will be very much more popular in the future because they will not be resorted to so often simply in cases of *extremis*.

I wish to report two cases where blood-transfusion gave good results:

One was in a condition of hemorrhagic purpura in a girl ten years of age. The condition had been present for three months, and the child was nearly exhausted, and the ordinary methods yielded no results. One blood-transfusion immediately transformed this patient, and she promptly regained a normal blood-picture.

Another patient was an adult man with a condition of angioneurotic edema, accompanied by extreme gastric crises, so severe that they might indicate a very severe intra-abdominal condition. In this case also, one blood-transfusion gave the patient much benefit.

No one should do blood-transfusions without determining the classes in which the donor and recipient are. We have encountered violent reactions, which certainly could only do harm to the patient, before this relatively simple method was used.

DR. A. A. LAW (Minneapolis): At the University Hospital we are entirely dependent upon the laboratory men for the study of the blood, and we have been ever since we have done transfusion. It does not come within the province of most busy surgeons to have the facilities or training or laboratory experience and ability to do these blood-analyses.

I am much impressed with Dr. Beard's discussion of the Massachusetts General Hospital system of keeping relays of donors, having them cross-indexed, and going to a file and picking out a donor who will be adapted to any particular group as the need arises. Before Dr. Beard and Dr. Rowntree put us on our

feet in the University Hospital in the matter of these groupings, we were entirely dependent upon studying every one of a number of various individuals who were prospective "donors," and testing their blood until we found one whose blood matched the patient's. This suggested method lessens the labor, and makes it of much greater utility.

As an instance in point, I reported a case at the Academy of Medicine last night. The patient was a little girl whom I saw day before yesterday. She had had constant epistaxis, which continued until she was almost exsanguinated, and had the lowest hemoglobin reading I have ever seen, only 8; but she was conscious, and her respiratory and circulatory centers apparently were functioning properly, but she was *in extremis*. She was paler than anyone I ever saw who was still alive. We did not have anybody to call upon, and we could not determine from a card-index who would fall into her group, and so we took the blood from her mother. I question very much whether her mother should have been used. In all probability the child was a hemophiliac. But the well-known tendency to maternal transmission of that disease possibly would have precluded our using the mother as the donor if we had anyone else available. As a matter of fact we gave that child 300 c.c. of blood, and brought her hemoglobin up from 8 to 25. I have not seen the child since. Dr. Rowntree may be able to give you some information about the patient.

Her hemorrhage stopped. I do not know what her blood-picture was. There was not time to study the coagulation point, and there was not time to determine what her blood-picture was prior to the transfusion. It was so grave an emergency that we had to take whoever was available. If we had had this card-index system, and a proper donor available, it would have been very simple to transfuse from someone who was in her group.

Vol 37

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

APRIL 1, 1917

CEREBROSPINAL MENINGITIC EPIDEMIC

Minneapolis has recently passed through, as have other cities, a serious epidemic of cerebrospinal meningitis. Isolated cases have occurred in various parts of the state, and the conditions are serious enough to ask the Legislature to permit a part of the fund, which we hope will be appropriated for infantile paralysis, to be expended in the care of these new epidemic cases. Not infrequently these children are taken sick without much warning, and the height of the acute stage is reached very rapidly, so that within a few hours a patient may be at the threshold of death, and a few hours later, when a spinal puncture is done and an intraspinal injection of antimeningitic serum given, the patient is on the way to recovery. Not so with all of them, for a good many run a much slower course, are not benefited by the antimeningitic serum, and become chronic cripples or chronic invalids.

The damage is not all done in the brain and cord, but most of the cases show evidences of insult to the spinal cord, the vertebral column, or the brain. In a recent article Curschman points out that an epidemic of myositis (muscle-inflammation) simulates these forms of meningitis,

because the severe articulatary and muscular rheumatism affects the spine and the muscles of the neck exclusively, and thus at first produces a clinical picture of an epidemic meningitis. Some of these conditions have been observed in Minnesota where the neck muscles, either in the front or in the back, have shown signs of an infective process. These children, as well as adults, complain of pain, soreness, stiffness, and rigidity lasting for several days, sometimes extending over a period of weeks.

As a rule, these cases are not accompanied by much disturbance beforehand, but, if the disease appears in epidemic form, it is likely to be ushered in by a stormy condition. It is very difficult in those cases to differentiate the disease from severe attacks of influenza.

These milder or imitative forms of meningitis are best controlled by salicylates and local application of heat, moist or dry.

A large percentage of deaths has occurred in the Minneapolis cases in the epidemic of the true form of cerebrospinal meningitis, and these patients exhibit the usual phenomena of distortion, limb palsies, and cranial-nerve palsies, with pain, severe at first, followed by coma and death.

These cases are reportable, and should be noted by every physician, and all physicians should be on the lookout for just this sort of thing.

If the Legislature is liberal in its contemplated appropriations for a campaign against infantile paralysis, it is quite likely that the survey will include cerebrospinal meningitis; and thus closer attention will be drawn to cases that should be isolated, as are other communicable diseases.

THE MEDICAL SCHOOL CONTROVERSY

So many minor, irrelevant, and immaterial issues have been raised in this controversy, and so many misstatements have been made, most of them probably due to a lack of knowledge of facts or to the misinterpretation of things written and said, that we shall endeavor to make plain the attitude of the profession toward the Mayo Affiliation. Some preliminary statements may be helpful to enable an outsider to comprehend and interpret the bitter controversy that has grown up.

FIRST: Dr. William J. and Dr. Charles H. Mayo have built up at Rochester, Minnesota, a clinic, in plain language a business, a surgical business, that has brought them great renown

and the just admiration of the medical and surgical world. In connection with this surgical business they have done a considerable, even a large, amount of research work, and they have done some postgraduate work by furnishing opportunities to graduate students and practicing surgeons to study in their Clinic. Some, if not all, of these men are attached to the staff of the Clinic and given moderate salaries, and for this nothing but praise is due.

Now, Dr. W. J. Mayo has a great ambition, and has worked unceasingly to carry out the project of an affiliation with the Medical School of the State University; and nothing will stand in the way of its accomplishment. That is the kind of organizer Dr. Mayo is.

SECOND: Three years ago a reorganization of the faculty of the Medical School was undertaken. At best, it was a bungling piece of work, and created antagonisms of the most unfortunate character,—unfortunate for the men involved and for the State of Minnesota. It is of interest now mainly because of the condition it created. It led to many misunderstandings throughout Minnesota and among medical men, and it has created discord in the medical profession, as well as in the Medical School.

THIRD: In the midst of the work of reorganization, if not a part of it, the so-called affiliation between the Medical School and the Mayo Clinic was brought to the attention of the General Faculty, and an early motion, possibly we should say a motion at an early subsequent meeting of the Faculty, was made to enter into the affiliation. Members of the Faculty asked for details of the plan, for the outlines at first given were confusing in phraseology and uncertain as to what the main idea was. Incredible as it sounds, no member of the Faculty could give even a faint outline of the real plan, but some of the members construed the request for information into opposition to the affiliation. Even as long as a year or more after this, the plan was not matured, and it required much labor and many conferences with the Drs. Mayo, by representatives of the Faculty and the Board of Regents, before the plan was ready for adoption.

We do not mean to impute to Dr. Mayo any wrong motive, nor even the slightest desire to gain an iota of advantage in thus presenting a crude plan of affiliation; but no words are too severe to condemn the Board of Regents and the Administrative Board for presenting such a plan

to the General Faculty, and for permitting proper and just opposition to it further to widen the breach in the Faculty and in the medical profession of Minnesota.

No man with intelligence need be told how unfortunate it was that Dr. W. J. Mayo, the recognized head of the Mayo Clinic and naturally the leader of the Regents in their dealings with the Medical School, was a member of the Board of Regents, even though not taking part in any of the Board's deliberations on the subject. His influence, however, was there, as his influence in medical matters is felt everywhere; and, unquestionably, his presence on the Board prevented full and free discussion of the plan. It would have looked better, however, if no representative of the Mayo Clinic had been a member of the Board of Regents at that time; but it is fair to assume that there will be on the Board a representative from the Mayo Clinic as long as it is affiliated or associated in any way with the University. If this be true, it is an unfortunate policy for the State to adopt. Suppose in the future alumni of the University or medical men of the state who are not in sympathy with the Affiliation are made regents of the University, will it not be possible for them to change the entire plan?

The contract is not very clearly drawn up, and some of the terms are indefinite in language.

We are not at all concerned with the details of the preliminary six-year trial of the plan. We want to deal only with that which is permanent, and would gladly give every doubtful point in the contract an interpretation as favorable as possible to the donors of the funds to carry on the work.

THE PLAN

1. The University of Minnesota was conducting graduate medical work in its Graduate School prior to the affiliation, the object of which was to train competent specialists and medical investigators. The Mayo Clinic was also giving graduate instruction and doing research work. The Drs. Mayo proposed an affiliation to carry on graduate work, and the ultimate end was the establishment of a graduate school in Rochester. With the two-million-dollar fund as an endowment, the Board of Regents will be able to carry on graduate work in Rochester, and may construct buildings or do research work. A part of the income may be used to do research work outside of Rochester or of the state.

2. The Board of Regents, if the affiliation becomes permanent, binds the State to continue graduate instruction and research work at Rochester *forever*.

3. In the absence of any reference in the contract as to how the graduate work is to be done in Rochester, the plans under which the work is now being carried on, which, it may be said, is the only way it can be successfully carried on in Rochester, show that the graduate students do their work in the Mayo Clinic, and, in the main, if not wholly, as assistants to members of the Mayo staff.

We frankly admit that this plan of work in Rochester, at least for the present, is admirable; and it may be so for many years to come, as it concerns surgical and research work.

THE OBJECTIONS TO THE AFFILIATION

1. An agreement by the State to do graduate medical work *forever* in a small city of the state simply because present conditions are exceedingly favorable to such work, is bad business policy.

2. An agreement by the State to do graduate medical work *forever* in connection with and dependent upon a private clinic subject to the vicissitudes of life, is bad business policy, and is fundamentally wrong unless reasonable conditions are laid down upon which a like arrangement will be made with any other group of individuals in any line of educational work carried on by the State.

3. To enter into a contract binding for *all time* against the earnest protest of a large group of citizens, such as the medical profession and the medical alumni of the University, is bad public policy.

4. A contract made by an official body with a firm or corporation one of whose members is a member of the contracting official body, is morally wrong and contrary to public policy, and the statutes of Minnesota *attempt* to prohibit it, although astute lawyers may evade the law in drawing a contract.

Three of the four objections above enumerated are, we think, so clearly stated, that they call for no comment; but, as the fourth may not be clear, we shall comment upon it.

The Drs. Mayo were above criticism when they required that the expenditure of any or all of the income from their magnificent gift be made in Rochester. The acceptance of the gift

with this qualification was a matter of business policy, as is the making of a lease for 999 years, a term practically equivalent to "forever." The making of a contract, if not the offer to make a contract, with the State that will tend to maintain a private business conducted by an individual, and hereafter to be conducted by his associates who are his relatives, by blood or marriage, is reprehensible.

It is the wish of THE JOURNAL-LANCET that all misunderstandings may be cleared away and also this dissension and lack of harmony which has gone on for so long may finally cease; and we wish to impress upon our readers that this discussion has been, in the main, an impersonal one, and is no personal fault-finding between man and man. The suggestion of the laymen that doctors are jealous of one another does not enter into this discussion. Doctors are no more jealous than other people, and it may safely be said that doctors make more sacrifices for the public than do other professional men.

TWO NEW MEDICAL MAGAZINES

The first copy of *Medicine and Surgery*, which hails from St. Louis, is before us. It may be fairly said that it more than meets the promises of its editor-in-chief, Dr. Philip Strainka, who has a small board of distinguished men as associate editors.

The current issue contains one hundred twenty pages, of the old-time magazine size, with many illustrations. It is devoted to surgery, and each subsequent issue will be devoted to a single department of medicine or surgery.

The table of contents of the first issue is exceedingly attractive; and the promises of the editor and his staff make certain that a high-grade periodical is offered the profession. The price of 30 cents a copy, or \$3.00 a year, will not support the paper unless its merits are early recognized, and the profession gives it the most generous support, which it deserves.

The Journal of Urology comes from Baltimore, and is to be issued bi-monthly. This new journal has a distinctive field; and its editorial management, the lines upon which it is planned, and the promise of the first number practically assure large success for the undertaking.

Dr. Hugh H. Young is the editor, and he has an associate staff of high-class men, connected with the leading medical schools of the country.

It is a Johns Hopkins journal.

CORRESPONDENCE

A REPLY FROM THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA

TO THE EDITOR:

In reply to certain communications recently published in *THE JOURNAL-LANCET*, and to addenda distributed with their reprints, the Medical School of the University of Minnesota begs to present the following facts of record regarding the present plans for hospital extension at the Medical School.

A. *"A plan for the Clinical Development of the School; for the Extension of the University Hospital; for the Support of Full-time Clinical Teachers; and for the Promotion of Graduate and Research Work, by a Combination of State Appropriations with Endowment Derived from Private Sources."*

Your Committee believes it possible to compose the differences of opinion which obtain with reference to the details of this important development. It believes that members of the faculty and of the medical profession, who are broadly interested in this educational problem and who desire to place the School upon a par with other first-grade colleges and to make Minnesota a center of medical education in the Northwest, can find a common ground, perhaps of compromise, in the following proposals, which it unanimously presents:

1. That the slowly obtainable support of the School by the State be supplemented by a fund to be raised by private subscription (a) for the completion of the hospital system at an early date; (b) for an endowment fund which shall be used, in part, for the payment of full-time clinical teachers and research workers; in part for an increase in the number of teaching-fellowships.

2. That the State be asked to continue and to add to the support of the hospital to the extent, at least, of the adequate maintenance of the free-patient service.

3. That eighty per cent of the further increase in the number of hospital beds derive support from per-diem charges on an approximate per capita cost basis.

4. That twenty per cent of such increase in the number of hospital beds, or fifteen per cent of the entire hospital capacity, be devoted to pay patients, under University control, in the service of full-time clinical teachers.

5. That the per-diem and hospital charges derived from all patients be added to the support funds of the hospital; *that the professional fees derived from University pay patients be placed in a fund to be used for clinical research; and that no fees derived from University patients be paid to clinicians.*

6. *That the salaries of full-time clinical teachers and research workers, in adequate amount, be provided, under direction of the Board of Regents, from the support funds of the University, reinforced by the endowment funds.*

7. That stipends for additional teaching fellowships be provided from the support and endowment funds of the School as rapidly as these will permit, and as the

opportunities for the work of such fellowships shall develop and the demand for them by suitable candidates will justify.

This plan has been tentatively approved by both the Administrative Board and the General Faculty, but, in accordance with the request of the Committee on Hospital and Clinical Development, has not yet been adopted by either.

B. A request for a Legislative Appropriation for \$200,000 for a clinical building. At a meeting of the Administrative Board held November 2, 1916, the following recommendation was made by the Committee on Hospital and Clinical Development:

"That the Board of Regents be requested to place on the Legislative Budget a hospital building to cost, with equipment, \$200,000, in which contagious cases may be placed as occasion requires; the question of maintenance to be referred to the Board of Regents; *it being understood, however, that no patients from whom physicians in charge would derive fees should be admitted.*"

This recommendation was unanimously approved by the Administrative Board and referred to the Board of Regents. The Board incorporated the request in its legislative budget. It appears on page 30 of the booklet entitled "Needs of the Biennium 1917-19" as follows:

"Contagious Hospital and Clinical Pavilion and equipment, \$200,000. Requested at the 1915 session \$100,000. University needs proper provision for students suffering from contagious diseases. Sometimes 30 to 40 at one time. *Building could also be used for much-needed clinical development for Medical School. Support from per-diem charge to patients. No doctors' fees.*"

This communication was approved by unanimous vote of The Administrative Board of The Medical School, March 19, 1917.

ELIAS P. LYON, Dean.
March 19, 1917. R. O. BEARD, Secretary.

A REPLY TO CHARGES AGAINST THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA

TO THE EDITOR:

A statement entitled "Why the Mayo Affiliation with the University should be Terminated" has been widely circulated. It contains errors of fact and implication reflecting seriously upon the character and conduct of the work of The Medical School of the University of Minnesota. These mis-statements the Administrative Board and the General Faculty desire to correct.

This statement, by intention, does not deal with the status of the Mayo Foundation or with any proposed plan for hospital extension. The former is still in the six-year trial period. The latter is under discussion.

The Medical School is a well-organized, effective, working unit. Its faculty members do not distrust each other. No "outside influence" or "directing authority" embarrasses the School. Healthy differences of opinion upon matters of policy and development exist; they always have existed; it is to be hoped they always will exist. They make for progress. That these differences of opinion are

born of mutual distrust is emphatically denied. They evidence the fact rather than the failure of democratic government.

There has been no "gag rule" on the medical campus. No consequences of any such thing are apparent. The freest opportunity for expression of opinion is given. Within the past year a second representative elected by the General Faculty has been added to the Administrative Board, a change which makes for more rather than less democracy.

Undergraduate student work has improved in quality from year to year.

A much needed expansion in buildings and equipment has been followed by as large a measure of internal development as a limited budget would permit.

That the Medical School has not deteriorated, that essential progress has been made, the following facts attest:

1. *Matriculation has increased* from 180 in 1912 to 263 in 1916. The increase has compelled the limitation of the entering class to eighty students. These are selected on a competitive basis, making for the superior quality of the student body and the attainment of higher standards of scholarship. Thirty-two per cent of the 115 applicants applying for entrance this year were rejected.

2. *The Dispensary has been moved to Millard Hall*, with the attainment of better facilities, of closer relations with the hospital, and a saving of student time. The attendance of patients in 1915 was 48,438; in 1916 it was 50,320.

3. *A social service department* has been established within the past two years, to the material increase of the efficiency of the Dispensary and to the very large benefit of the patients. The teaching staff in the outpatient service shows an increase of twenty per cent in number.

4. *A psychologic and psychiatry clinic* has been developed jointly by the Medical School and the College of Education and is conducted by a joint committee of the two units. It has begun a good service to the state in the examination and study of the mental and physical status of retarded or subnormal children.

5. *The fundamental departments* have been strengthened. The research activities of instructors have been stimulated, as the records of publication show.

6. *Closer and more sympathetic relations* have been formed between the Medical School and other colleges of the University. Courses, increased in number and improved in character, are open to students from other divisions of the University.

7. *The curriculum has been broadened*; the didactic teaching diminished; practical instruction extended. The elective system has been introduced. Students are encouraged in the development of individual talent and in the serious consideration of personal needs and instructional values. The elective system has proved a stimulus to advanced work.

8. *The headship of the Department of Medicine* has been put upon a practically full-time basis. The Chief of the Department devotes a large total of time to the hospital and to undergraduate teaching. A resident hospital physician and full-time assistants

have been provided. A metabolism laboratory has been equipped. Dispensary teaching in medicine has been reorganized. The Dispensary medical staff has been increased from eleven to twenty-six teachers. A tuberculosis clinic has been established. The clinic in syphilis has been notably developed and the social service department, in the following up of infected cases, is doing a large service to the public. The part-time members of the department have entered cordially into these new arrangements. Cases are better studied; teaching is greatly improved; students show a larger interest; and research is fostered.

9. *The clinic clerkship system* has been greatly extended and provides each senior student with four months' active hospital service devoted to the personal examination and study of cases.

10. *The State Hospital for the Crippled and Deformed* at Phalen Park has been affiliated. Students receive admirable instruction in Orthopedic Surgery at this institution.

11. *Graduate work* has been fostered in the laboratory departments. Four students studying there have taken the Ph.D. and seven the M.A. or M.S. degree.

Graduate work has begun in the clinical branches. In co-operation with the Graduate School the first comprehensive system of instruction offered, anywhere in the world, for the training of specialists in medicine has been developed. It has been applauded by medical educators; its adoption in other Universities is probable; it has been approved by the Council on Education of the American Medical Association.

Ten Teaching Fellowships and several scholarships represent this work in the clinical branches. These Fellows are not trained at the expense of undergraduate work, but to its distinct advantage. They serve as teaching assistants of a high order. They enable the student, under their safe supervision, to come into closer contact with the patient. They stimulate the student's love of investigation. Four of these Fellows and several other graduate students are candidates for advanced degrees in June, presenting theses that are recognized contributions to medical and scientific knowledge.

12. *The Divisions of Ophthalmology and Oto-Laryngology and of Pediatrics* have been organized as Departments. Their staffs have been enlarged and their scientific work greatly promoted.

13. *A Summer School* has been established, rather than abandoned. It is stated, wrongfully, that "graduate work for the medical profession in the state, as formerly offered in the summer school for practicing physicians, has been entirely abandoned at the University since the affiliation was established, except as it is carried on in a limited number of fellowships."

True, the short "snap" courses of the past have been discontinued, because they represented an undesirable type of teaching at their best. More intensive work for the undergraduate is done in the summer school instead. But to practitioners, summer or winter, the larger hospitalities of the Medical School are extended. Of the quality of the opportunities offered, witness the following quotation from the Bulletin of The Medical School of 1916-17:

"Physicians who desire to attend medical lectures and clinics for a limited period may obtain visitors' tickets from the Dean. They may enter regular lecture courses in the Medical School upon a matriculation fee of \$10. They may arrange for special courses of study in Anatomy, Physiology, Experimental Surgery, Pathology, Bacteriology, Pharmacology, etc., at a fee of \$25.00 per each full semester's course, with additional charge for material used."

Several practitioners, other than Fellows, are now engaged in graduate study in the clinical branches.

14. *No full-time member of the Faculty*, above the rank of instructor, has been lost to the School, despite numerous attractive offers. Closer attention to teaching duties; keener interest, better service, more definite specialization of teachers, are in evidence. Co-operation between departments has been secured. A clinical-pathologic conference, a clinical-therapeutic conference, and a University medical society have been established. Students are reacting favorably to these broader opportunities.

15. *More critical and scholarly habits* have been cultivated in the student body. The larger use of the library is proof of the fact. Books drawn for outside reading in 1912-13 numbered 1085; in 1913-14, 1767; in 1914-15, 3362; in 1915-16, 6296. The librarian states that reading in the library has been trebled in the last two years. Departmental collections, formerly inaccessible, have been added to the library.

16. *The University Hospital* has been increased from 125 to 192 beds. A modern service building has been added to make this growth possible.

The Medical School invites investigation of the truth of every detail of this statement in reply to the charges made against it.

Approved by vote of the Administrative Board and of the General Faculty of The Medical School of The University of Minnesota, March 19th, 1917.

Signed:

John M. Armstrong
J. F. Avery
L. B. Baldwin
Moses Barron
R. O. Beard
E. T. Bell
Anne G. Benton
C. A. Boreen
E. D. Brown
Paul F. Brown
John Butler
Walter E. Camp
Howard S. Clark
W. H. Condit
Henry Wireman Cook
J. Frank Corbett
C. A. Erdmann
E. S. Geist
Arthur S. Hamilton
E. M. Hammes
T. B. Hartzell
A. T. Henrici
A. D. Hirschfelder
E. J. Huenekens
H. G. Irvine
C. M. Jackson
James A. Johnson
J. B. Johnston
F. B. Kingsbury
W. P. Larson
R. T. LaVake
Arthur A. Law
T. G. Lee
W. W. Lewis
J. C. Litzenberg
E. P. Lyon
John S. Macnie
C. O. Maland
Arthur T. Mann

J. F. McClendon
J. E. Moore
A. W. Morrison
Wm. R. Murray
Jay A. Myers
G. M. Olson
Oscar Owre
Harold Pederson
C. J. V. Pettibone
Fred J. Pratt
A. T. Rasmussen
C. A. Reed
E. T. F. Richards
Harry P. Ritchie
Robert I. Rizcr
Thos. S. Roberts
H. E. Robertson
F. C. Rodda
John L. Rothrock
L. G. Rowntree
R. E. Scammon
F. W. Schlutz
J. P. Schneider
F. H. Scott
J. P. Sedgwick
I. H. Simons
Chester A. Stewart
A. C. Strachauer
Arthur Sweeney
S. E. Sweitzer
F. C. Todd
H. L. Ulrich
Margaret Warwick
S. Marx White
F. W. Wittich
C. B. Wright
F. R. Wright
H. B. Zimmerman

OFFICIAL STATEMENTS UNIVERSITY OF MINNESOTA

(Published by request of the Administrative Board)

The following statements, made public by the Board of Regents of the University of Minnesota, are of interest to the medical public.

I ON BEHALF OF THE BOARD OF REGENTS

On behalf of the Board of Regents it is asserted in support of its contract of June 9, 1915, with the Mayos:

1. That the Board is by law vested with the government and general educational management of the University and is required to elect proper professors, teachers, officers, and employes and fix their salaries, and is authorized to accept in trust gifts for educational purposes and to hold, manage, invest, and dispose of the same and the income therefrom in accordance with the conditions of the gift and the acceptance thereof.

2. In accepting the gift set forth in the contract of June 9, and in agreeing to furnish an annual estimate of the money required to carry on the work, the Board was within its powers,

(a) Because the Board holds the same relation to and exercises the same authority and jurisdiction over the teaching staff doing work under the gift that it exercises over all other members of the teaching staff of the University;

(b) Because the funds will all come to the University when the arrangement becomes permanent and be wholly under the management and control of the Board which in its discretion may use the income of the funds for graduate medical and surgical instruction and research, or for the erection of buildings, at Rochester, or make appropriations therefrom for medical investigation anywhere;

(c) Because upon the transfer of the funds to the University the Mayo Foundation, Incorporated, will cease to have anything to do with the fund, or the work done with the income therefrom, but the fund itself will be known and designated as the Mayo Foundation;

(d) Because by paragraph IX of the contract of June 9 all provisions of the trust agreements attached to that contract are altered and amended and made subordinate to said contract of June 9; to the end that those agreements may serve during the trial period and cease to exist if the arrangement becomes permanent;

(e) Because the University is not bound by the terms of the gift to have any connection whatever with the Mayo Clinic;

(f) Because the object of the gift is purely educational, is of inestimable value to the medical profession, and is for the good of the whole people;

(g) Because the gift accomplishes at private expense, what otherwise would be a public expense.

FRED B. SNYDER,
President of the Board of Regents.

II ON BEHALF OF THE MAYO FOUNDATION

Rochester, Minn., March 19, 1917.

HONORABLE F. B. SNYDER,
President of the Board of Regents,
University of Minnesota.

Dear Sir:

Certain questions having been raised, we the under-

signed, Founders, Officers, and Trustees of the Mayo Foundation desire to make the following statements:

1. We agree to waive our right to terminate the agreement entered into with the University of Minnesota June 9, 1915, and to leave to the University alone the decision as to whether the final purpose shall be carried out.

2. We agree to turn over to the University of Minnesota at once the securities described in exhibits 2 and 3 of said contract together with additional investments and cash representing the accumulated income, a total of approximately \$1,600,000, with the understanding that by accepting this trust the University in no way prejudices its right to terminate the temporary arrangement in accordance with its terms and to return the funds.

3. We further agree that pending the final decision by the University, the Mayo Foundation will continue to defray the annual expenses of graduate work and research in accordance with a budget determined by the University, and that the income from the deposited securities shall be added to the principal.

4. We understand that, with the close of the experimental period, the Mayo Foundation as a separate corporation together with the Trustees as such would cease to exist, and would become the name of the fund and the work supported by its income.

5. We further understand that the funds and the work subject only to the conditions set forth in paragraph VIII of the contract would be under the sole control of the University.

(Signed) WILLIAM J. MAYO,
CHARLES H. MAYO.

MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH, INCORPORATED

BURT W. EATON	HENRY S. PLUMMER,
GEORGE W. GRANGER	President.
HARRY J. HARWICH	DONALD C. BALFOUR,
Trustees.	Secretary.

THE ADMINISTRATIVE BOARD VOTES FOR THE CONTINUATION OF THE FULL TRIAL PERIOD OF THE AFFILIATION

TO THE EDITOR:

I am directed to ask your publication of the following resolution adopted by the Administrative Board of the Medical School, March 19, 1917:

The Administrative Board of the Medical School unanimously agrees that the Mayo Affiliation should be continued for the trial period of six years.

RICHARD OLDING BEARD,
Secretary.

March 28, 1917.

GRADUATE WORK IN MEDICINE AT THE UNIVERSITY

TO THE EDITOR:

In an editorial of March 15, 1917, THE JOURNAL-LANCET gives currency to the following statement: "That the Graduate School in Medicine has consisted so far of but one student."

The statement is one so clearly lacking editorial responsibility and so prejudicial to the interests of medical education in this state that it sends the careful inquirer at once to the records of the University for light. These records show:

1. That ten Teaching Fellows are pursuing three-year courses in graduate medicine leading to the degree of Doctor of Science.

2. That four of these Teaching Fellows are candidates for the degree next June.

3. That two Graduate Scholars in medicine are engaged in two- or three-year courses of study.

4. That a Shevlin Fellow in Medicine is doing advanced research work.

5. That four graduate students in medicine, other than Teaching Fellows, have received the Ph. D. degree in the past two years.

6. That seven graduate students in medicine have received the M. A. or the M. S. degree in the same period.

7. That twenty-seven graduate students, in addition to the Teaching Fellows and Graduate Scholars, are taking majors or minors, or both, or are pursuing special courses of graduate study in the Medical School. These men represent sixteen different institutions from which they come to Minnesota.

As a matter of fact, the University of Minnesota, though embarking upon real graduate work in medicine very recently, easily leads the country in this field. These students are all in residence here, but they represent the same type of work as the Mayo Foundation, affiliated with the University, helps to foster.

RICHARD OLDING BEARD.

NEWS ITEMS

Dr. P. J. Griffin, of Fertile, has moved to Chicago, Ill.

Dr. J. T. Bowers, of Wausau, Wis., has located in Lake City.

Dr. W. T. Stone, of Murdock, has moved to Park Rapids.

Madison, S. D., is planning a hospital to cost about \$35,000.

Dr. R. S. Hart has moved from Turton, S. D., to Groton, S. D.

Dr. Eivind Klaveness, of Sioux Falls, S. D., has located in Minneapolis.

Burtrum, a town of 250, seventeen miles from Sauk Center, is without a doctor.

A verdict of \$7,933.50 was given in a malpractice suit in North Dakota last month.

Dr. O. B. Nugent, of Minot, N. D., has entered into partnership with Dr. G. R. Ringo, of Minot.

Dr. Z. E. House, government physician and Indian agent, has been elected mayor of Cass Lake.

Dr. A. N. Rowe, of Heron Lake, has purchased the practice of Dr. G. H. Burleigh at Estelline, S. D.

Dr. A. P. Walrath, of Minneapolis, died on

March 20 after an operation for appendicitis, at the age of 61.

Dr. A. E. Hillis, of La Moure, N. D., is taking a postgraduate course in eye, ear, nose, and throat work at the Chicago Polyclinic.

Dr. Anton Sanderson, of Porter, has returned to Minneota, and has become associated with his brother, Dr. E. T. Sanderson.

Dr. C. S. Jones has returned to Williston, N. D., after an absence of two months, spent in postgraduate work in the East.

The St. Paul City and County Hospital has set aside a special building for the care of patients with spinal meningitis.

An honorary fraternity called the Incus Society has been organized in the Medical School of the University of Minnesota.

The Health Department of Duluth will distribute silver-nitrate solution free, in its movement to prevent blindness in children.

Dr. A. J. Kirghis, of St. Cloud, is seriously ill with pneumonia. The doctor only recently returned from the war zone in France.

Dr. O. O. Sawyer, a resident of South Dakota for over thirty-five years, died last month at his home in Dell Rapids, S. D., at the age of 61.

Duluth is agitated over the question of a whole-time health officer. The physicians urge such an appointment, and the press opposes it.

Fifty-seven Minnesota towns are on the 1916 honor roll of the American Red Cross for selling five or more Christmas seals for every person in the town.

Charges of the improper uses of supplies made against Dr. J. M. Scanland, superintendent of the Montana Hospital for the Insane, were completely disproved.

Dr. O. Kittelson has dissolved his partnership with Drs. Bratrud and Anderson, of Grand Forks, and will spend a few months in postgraduate work in New York City.

The annual meeting of the Stearns-Benton County Society will be held in St. Cloud on April 19. Sauk Rapids and St. Cloud will give the visiting physicians a banquet.

Dr. R. I. Hubert has been appointed temporary inspector in the St. Paul City Health Department, there being too much work for the three doctors acting as inspectors.

Dr. Charles F. Denny, of St. Paul, died last month of heart disease at the age of 59. Dr.

Denny began practice in St. Paul in 1880, and continued in active practice until the fall of 1916.

Minneapolis now has the promise of a non-political health department, the bill for such having been passed by the House of Representatives of the State Legislature under suspension of the rules.

It is estimated that over twenty thousand physicians in the United States are ready to do the medical and surgical work incident to war, and will tender their services to the Government the moment war is declared.

Dr. Augustus W. Stinchfield, of Rochester, died last month at the age of 74. Dr. Stinchfield was one of the pioneer physicians of Olmsted County, having practiced in Eyota nearly twenty years before locating in Rochester.

Dr. Harold Cooperman, of Minneapolis, a recent graduate of the State Medical School, has become associated with Drs. Witherstine and Wilson, of Grand Forks, N. D. Dr. Cooperman will do special work in Chicago and New York until June 1.

The Surgeon-General of the United States suggests that physicians throughout the country plan to look after the practice of men who may enter the army medical service in case of war. The subject should be discussed in every county medical society.

The first week in May will be observed in many states as "Baby Week" under the Federation of Women's Clubs. The Children's Bureau of the U. S. Department of Labor will co-operate. The purpose is to spread information that will reduce the mortality due to childbirth.

Dr. Kenneth Taylor, of St. Paul, has been appointed director of the Robert Walton Golet Research Laboratories, to be operated in connection with the Doyen Hospital in Paris. The hospital is to be re-named the American Red Cross Hospital, having been taken over by that body.

Drs. A. W. Macdonald, S. A. Zimmerman, and C. E. Spicer, of Valley City, N. D., have taken commodious quarters in the New Medical Block of that city, and will build up a general clinic. Mr. Macdonald will do general surgery, Dr. Zimmerman will do the gynecological surgery and obstetrics, and Dr. Spicer will do eye, ear, nose, and throat work. A graduate nurse is employed, and a man to do the general medicine work will be associated with the clinic.

PHYSICIAN WANTED

Young doctor is wanted to locate in a wide-awake town. Good chance to work up a practice. Write President of Alberta Commercial Club, Alberta, Minn.

PHYSICIAN WANTED

A good physician is wanted in a west central Minnesota town of mixed population. A German- or English-speaking doctor preferred. Address 481, care of this office.

PRACTICE FOR SALE

Unopposed practice in Minnesota, railroad and county appointment. Will sell for price of real estate. Mixed population. Best of reasons for selling. Address 472, care of this office.

OPENING FOR A DOCTOR

A splendid opening for a doctor and druggist in a town of 200. Doctor must be Scandinavian. Good territory, no competition. For information, write Clay County State Bank, Hitterdal, Minn.

MEDICAL BOOKS AND INSTRUMENTS FOR SALE

The medical books, instruments, and medicines belonging to the late Dr. John Knight, of Redby, Minn., are for sale. Address Mrs. John Knight, Redby, Minn.

OFFICE POSITION WANTED

Young woman with experience as stenographer and bookkeeper desires position as office assistant in a physician's office in Minneapolis. Best of reference. Address 478, care of this office.

POSITION WANTED BY NURSE

A Chautauqua School nurse desires a position in a physician's office, in a private office, or with a physician where she can have practical work continuously at a reasonable salary. Address 486, care of this office.

LOCUM TENENS WANTED

A physician, licensed in Minnesota, is wanted to substitute on the staff of the Nopeming Sanatorium during the month of May. Address Superintendent, Nopeming Sanatorium, Nopeming, Minn.

OFFICE WORK OR SECRETARYSHIP WANTED

Young woman with large experience in medical work wants position of responsibility. Has had several years' experience in reporting operations in the operating-room of a large hospital. Highest references given. Address 464, care of this office.

PARTNERSHIP OFFERED

Young physician wanted as partner in a small modern Minnesota town; rich farming community; practice paying \$6,000 to \$7,000; hospital opportunity and surgery. Give all particulars and references in first letter. No real estate. Address 471, care of this office.

LOCATION OPEN

A fine opportunity to step into a practice of a doctor in one of the best towns in Northern Minnesota. Town has electric lights and waterworks and a modern school costing \$45,000. The creamery in town does a business of \$150,000 a year. This needs a quick reply. Address 484, care of this office.

POSITION IN OFFICE WANTED

Nurse with knowledge of bookkeeping and stenography desires position in a doctor's office. Phone Nicolle 2947, or address 479, care of this office.

SCANDINAVIAN PHYSICIAN WANTED

There is a good opening in a new town with excellent territory in northern Minnesota for a Scandinavian physician. Address 475, care of this office.

PRACTICE FOR SALE

Practice for sale in a town of 800 in western Minnesota; very large community; good roads; collection, 99 per cent. Practice amounts to \$5,000 or more a year. Am going into a hospital. I want to sell only my home. If interested, address 473, care of this office.

LOCATION OR PARTNERSHIP IN A CITY OR TOWN WANTED

I desire to form partnership, with a view to purchase of practice, with a good man in a city or town. English-speaking community preferred. Ten years' experience in general practice. Best of references. Address 477, care of this office.

A GOOD LOCATION IN A LIVE NORTH DAKOTA TOWN

Here is a chance for a good physician and surgeon after April 1. The field is large, and pay is of the best. If you are looking for something better than what you now have at hand it will pay you to investigate. For all particulars write us and send all references in first letter. No practice or office to buy. Nyal Drug Store, Hannah, N. D.

PRACTICE FOR SALE

A \$6,000 practice with collections of over \$5,000 in southern Minnesota town of 500. Unopposed. Railroad center and railroad surgeon appointment at this point. I desire to do post-graduate work. Wish to sell house and lot, Buick roadster, and office equipment. \$4,500 takes the whole. Population is mixed with German predominating. Nearest competition is nine miles. Address 476, care of this office.

SPLENDID LOCATION OPEN

A Catholic doctor who can talk some German will find a very good opening in a small, fast-developing town in Montana. Large territory; fine climate. This is an excellent opportunity for a young man who is willing to get out and hustle and wants to get a start. Can point out similar places where young doctors started out in such small places under about the same conditions and made fortunes in less than ten years. For further information, address 485, care of this office.

DOCTOR

Doctor: If you want practical postgraduate work during the fine season in the delightful city, write for particulars. Thirtieth annual session opens September 25, 1916, and closes June 9, 1917. New Orleans Polyclinic, P. O. Drawer 770, Graduate School of Medicine, Tulane University of Louisiana.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Ada	1,253	1,432	2															
Albert Lea	4,500	6,192	4													2		1
Alexandria	2,681	3,001	5			1										1		
Anoka	3,769	3,972	6															
Austin	5,474	6,960	7	2														1
Barnesville	1,326	1,353	3															
Bemidji	2,183	5,099	10			2									1			2
Benson	1,525	1,677	1													1		
Blue Earth	2,900	2,319	1															
Brainerd	7,524	8,526	12			2									1	2		
Breckenridge	1,282	1,840	1															
Canby	1,100	1,528	4		1													
Cannon Falls	1,239	1,385	2												1			
Chaska	2,165	2,050	2															
Chatfield	1,426	1,226	1															
Cloquet	3,074	7,031	5													2		1
Crookston	5,359	7,559	4															2
Dawson	962	1,318	1															
Detroit	2,060	2,807	2													1		
Duluth	52,968	78,466	93	4	2	15	2	0	0	0	0	0	0	2	2	8	1	7
East Grand Forks	2,077	2,533	2			1												
Ely	3,572	3,572	2														1	
Eveleth	2,752	7,036	4	1		1												
Fairmont	3,440	2,958	4	1													1	
Faribault	7,868	9,001	16			2									1	4		
Fergus Falls	6,072	6,887	24	5											1	1		2
Glencoe	1,788	1,788	0															
Glenwood	1,116	2,161	2	1														1
Granite Falls	1,454	1,454	2		1											1		
Hastings	3,811	3,983	6									1						1
Hutchinson	2,495	2,368	3															
International Falls		1,487	3			1												1
Jordan	1,270	1,151	0															
Lake City	3,142	3,142	4	1													1	
Le Sueur	1,937	1,755	1															
Little Falls	5,774	6,078	2			1												
Luverne	2,223	2,540	2														1	
Madison	1,336	1,811	2													1		
Mankato	10,559	10,365	19			1								1	1	1		3
Marshall	2,088	2,152	1			3												
Melrose	2,591	2,591	0															
Minneapolis	202,718	201,408	399	33	7	50	5	2	1	0	0	0	0	0	6	33	1	15
Montevideo	2,146	3,056	5	2														
Montgomery	979	1,267	2														1	
Moorhead	3,730	4,840	6	1														
Morris	1,934	1,685	1															
New Prague	1,228	1,554	3														1	
New Ulm	5,403	5,648	10	1													1	
Northfield	3,210	3,215	4															
Ortonville	1,247	1,774	4	1		1	1											
Owatonna	5,561	5,653	6															1
Pipestone	2,536	2,475	3														1	
Red Lake Falls	1,666	1,666	1															
Red Wing	7,525	9,048	15													1		1
Redwood Falls	1,661	1,666	6															
Renville	1,075	1,182	3			2												
Rochester	6,843	7,844	53	1	1	1									1	8		4
Rushford	1,100	1,011	2															
St. Charles	1,304	1,159	0															
St. Cloud	8,663	10,600	8	1													1	
St. James	2,102	2,102	1															
St. Paul	163,632	214,744	253	18	4	24	1	1	0	0	0	0	0	1	2	23	2	36
St. Peter	4,302	4,176	0															
Sauk Centre	2,154	2,154	2															
Shakopee	2,046	2,302	1															
Sleepy Eye	2,046	2,247	0															
South St. Paul	2,322	4,510	3			1												
Staples	1,504	2,558	2		1													
Stillwater	12,318	10,198	5	1													1	
Thief River Falls	1,819	3,174	4															
Tower	1,111	1,111	0															
Tracy	1,911	1,826	0															
Two Harbors	3,278	4,990	6		1	1												
Virginia	2,962	10,473	16			3			1							2	1	4
Wabasha	2,622	2,622	3	1														
Warren	1,276	1,613	2		1													
Waseca	3,103	3,054	7															
Waterville	1,260	1,273	2														1	1
West St. Paul	1,830	2,660	2			1												
Willmar	3,409	4,135	5															1
Winona	19,714	18,583	28	1		1										3		
Winthrop	813	1,043	0															
Worthington	2,386	2,385	2															

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,212	1				1											
Aitkin	1,719	1,633	1															
Akeley			0															
Appleton	1,184	1,221	1			1												
Belle Plaine	1,121	1,204	3			1												
Biwabik		1,690	5		1	2											1	
Bovey		1,377	0															
Browns Valley	721	1,058	0															
Buffalo	1,040	1,227	2														1	
Caledonia	1,175	1,372	1										1					
Cass Lake	546	2,011	2															
Chisholm		7,684	6			2												2
Coleraine		1,613	1			1												
Delano	967	1,031	0															
Farmington	733	1,024	2															
Fosston	864	1,055	0															
Frazee	1,000	1,645	4	1														
Grand Rapids	1,428	2,239	1															
Hibbing	2,481	8,832	12		2	2										1	2	
Jackson	1,756	1,907	1															
Janesville	1,254	1,173	2												1			
Kenyon	1,202	1,237	1															
Lake Crystal	1,215	1,038	0															
Litchfield	2,280	2,333	8															1
Long Prairie	1,385	1,250	1															
Madelia	1,272	1,273	3															
Milaca	1,204	1,102	0															
Mountain Lake	959	1,081	1															1
Nashwauk		2,080	0															
North Mankato	939	1,279	1															
North St. Paul	1,110	1,404	0															
Osakis	917	1,013	1															
Park Rapids	1,313	1,850	3			1											1	
Pelican Rapids	1,033	1,019	0															
Perham	1,182	1,376	3															
Pine City	993	1,258	1															1
Plainview	1,038	1,175	1															
Preston	1,278	1,193	4														2	
Princeton	1,319	1,555	3		1													
St. Louis Park	1,325	1,743	4															1
Sandstone	1,189	1,818	0															
Sauk Rapids	1,391	1,745	1															
South Stillwater	1,422	1,343	2															
Springfield	1,511	1,482	3												1			
Spring Valley	1,770	1,817	2													1		
Wadena	1,520	1,820	5													1		2
Wells	2,017	1,755	1															
West Minneapolis	2,250	3,022	2	1														
Wheaton	1,132	1,300	1															
White Bear Lake	1,288	1,505	2	1														
Windom	1,944	1,749	0															
Winnebago City	1,816	2,555	1			1												
Zumbrota	1,119	1,138	1															
STATE INSTITUTIONS																		
Anoka, Asylum			6	2														
Faribault, School for Blind			0															
Faribault, School for Deaf			0															
Faribault, School for Feeble Minded			4		1	1												
Fergus Falls, Hospital for Insane			0															
Hastings, Asylum			1															
Minneapolis, Soldiers' Home			5														3	
Owatonna, School for Dependents			0															
Red Wing, State Training School			0															
Rochester, Hospital for Insane			14			1											2	1
Sauk Centre, Home School for Girls			0															
St. Peter, Hospital for Insane			16	2		3												1
St. Cloud, State Reformatory			0															
Stillwater, State Prison			4			1											3	
OTHER PARTS OF STATE			797	64	5	89	8	5	1	0	4	1	1	2	21	72	1	42
Total for state			2088	147	29	221	18	8	3	0	5	1	2	8	45	190	6	139

*No report received. REGISTRAR not doing his duty.

1 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

POSTGRADUATE WORK

The Chicago Polyclinic and the Post-Graduate Medical School open three-week courses on April 2 at the former school and on May 7 at the latter.

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In spite of all of the modern advances in scientific therapy, and the improvements in the general handling and management of acute infectious diseases, acute lobar pneumonia still deserves the title ascribed to it by Osler: "The Captain of the Men of Death." There are, however, especially during the winter months, many cases of the lobular or irregular pneumonia that so often complicates or follows la grippe. When this condition supervenes it is more than likely to follow a sub-acute or chronic course, and convalescence is frequently long delayed. Under such circumstances, in conjunction with treatment designed to hasten resolution, a general blood tonic and vitalizing agent helps materially to shorten the convalescent period. Pepto-Mangan (Gude) is of much value in this field, because it not

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THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, APRIL 15, 1917

No. 8

THE INTERNAL SECRETION OF THE OVARY*

By J. L. ROTHROCK, M. D.
ST. PAUL

The influence of the sexual glands on the growth and development of the body has long been known. As early as 1849, Berthold demonstrated that the body-changes following castration of young cockerels could be prevented by implanting the testicles in some distant part of the body, and that birds thus operated on developed the vocal powers, the desire for combat, the comb, and the sexual instincts of normal cocks. It is likewise a familiar clinical observation that the removal of the ovaries in early life prevents the normal development of the uterus and the appearance of menstruation, while their removal after menstruation is established causes cessation of menstruation and atrophy of the uterus and remaining structures of the genital tract.

This observation led Brown-Sequard many years ago to express the opinion that the ovaries, like the male sexual glands, were the source of an internal secretion.

In recent years corroboration of this view has been furnished by numerous observers, both from experiments on lower animals and from clinical observation following the removal of the ovaries in women, until from the mass of accumulated evidence from literature, the production of an internal secretion by the ovary has come to be accepted as established beyond doubt.

What now do we understand by the term "internal secretion"? According to Walthard, the conception of an internal secretion includes the combined function of the elaboration and elimination of a specific substance extracted from

the blood by the specially differentiated epithelium of certain glands of the body, the specific product being liberated and discharged into the circulation.

Owing to the fact that the internal secretion of the ovary has not been isolated, its source, origin, nature, and chemical composition are still subjects of controversy. Three possible sources of origin have been proposed: (1) the follicle of the ovary; (2) the so-called interstitial glands of the ovarian stroma; and (3) the corpus luteum.

Little evidence has been produced in support of the follicular theory. It has been assumed that the internal secretion is elaborated by the epithelial structure of the follicle, and is present in the fluid of the follicles. Experimental injections of this fluid have so far failed to produce results indicating that it contains a specific active principle.

In recent years, following the publication of the thesis of Limon, the interstitial glands found in the stroma of the ovary, have been regarded as a possible source of the internal secretion; but their presence varies, the number not being constant, sometimes being very few, especially in human ovaries, so that there is no convincing proof at hand that they elaborate a specific hormone. Furthermore, while, histologically considered, they are epithelioid structures, their origin is not definitely established and the consensus of opinion tends to the view that they are of mesoblastic origin; and therefore they do not meet the requirements of our conception of glands with internal secretion in the sense of Walthard's definition. So little experimental evidence has

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

thus far been produced to prove their specific action that, as a source of origin of an internal secretion, they may for the present be left out of consideration.

Up to the present time the preponderance of evidence points to the corpus luteum as being the source of the internal secretion of the ovary.

As far back as 1898 Prénant first suggested that the corpus luteum probably produced an internal secretion which possessed the power of inhibiting ovulation, and thus prevented the interruption of pregnancy. At that time this view appeared to have escaped notice, and it was not until Fränkel, a few years later, advanced his well-known theory, that the corpus luteum has received much attention.

In 1901 Fränkel, working on the hypothesis of Gustave Born, a former embryologist of Breslau, whose unpublished view was, that the corpus luteum graviditatis must, from its histological structure, be a gland with an internal secretion possessing the specific function of influencing implantation and development of the ovum in the uterus, began a series of research observations which have extended over more than twelve years, and have included no less than eleven original communications on the subject and which have succeeded in establishing definitely and beyond dispute Born's hypothesis.

Fränkel's painstaking investigations involved experiments on no less than 400 rabbits. In 112 isolated instances total extirpations of the corpus luteum in impregnated animals within the first two weeks, prevented implantation of the ovum without a single exception if the operation followed in the course of the first six days after impregnation, or interrupted the pregnancy if the operation was done after the insertion of the ovum, between the seventh and fourteenth day. The same results followed double castration.

Numerous control experiments, such as simple laparotomy or removal of a part of the ovary or a part of the corpus luteum, failed to produce like results.

Fränkel therefore summarizes his conclusions from his observations as follows:

1. "The corpus luteum from the age of puberty increases the nutrition of the uterus. During this entire period, the increased size and turgor of the organ, as well as the monthly cyclical hyperemia, are directly dependent upon the internal secretion of the ovary."

2. "Its continued secretory activity causes, on the one hand, the insertion and development

of the impregnated ovum, and, on the other hand, if the ovum fails to become impregnated, menstruation."

The interesting experiments of Leo Loeb on the effect of the corpus luteum in the production of the decidual reaction are in direct confirmation of Fränkel's results. Loeb concludes that the corpus luteum produces a hormone which sensitizes the endometrium, so that a decidual reaction may be produced by irritation of the endometrium, as by the introduction into the uterine cavity of foreign bodies, even in the absence of the ovum. The decidual reaction corresponds to that accompanying tubal pregnancy.

The close correspondence between the experimental and clinical results of Fränkel, and the epoch-making histological work of Hitschmann and Alder, tend to prove that the corpus luteum produces the pregravid changes in the endometrium, and that the ovum of the premenstrual period is the one which becomes impregnated, and that implantation never follows after menstruation begins, but always takes place shortly before the date of the first failing menstruation. Miller accordingly makes the interesting deduction that, if this be true, we must reduce the average estimated duration of pregnancy by about nineteen days. These newer researches also render untenable the view that ovulation and menstruation are synchronous.

What, now, is the *modus operandi* of the internal secretion of the corpus luteum? Formerly, menstruation and the phenomena attending it, were supposed to be due to nervous influences. The experiments of Knauer have shown that after transplantation of the fully isolated ovaries under the skin or muscles or in the great omentum in bitches, the animals again come in heat; and Halban, experimenting upon the higher apes by transplanting the ovaries after castration, was able to bring about genuine menstruation. Also the experiments of Rein have shown that the separation of the uterus from all possible connections with the cerebrospinal centers did not prevent pregnancy and birth from taking place. All these experiments go to prove that the activity of the sexual glands upon the function of the body depend upon chemical, rather than nervous, influences.

Many attempts have been made to isolate the active principle of the internal secretion of the ovary, but so far without results. Miller sought to recognize the internal secretion in the reagent glass through complement fixation; and, after ex-

tensive research, he concludes with Biedl, that the failure is due to the fact that the hormone of the ovary never gives occasion for an antibody.

Miller, after a careful review of the literature, together with many original observations, which confirm in every detail Fränkel's observations, concludes that "the corpus luteum is a periodic-forming gland with an internal secretion. It causes the cyclic changes in the endometrium, and it produces the decidual reaction; it makes possible the implantation of the ovum; it acts as a trophic center for the uterus; and it hinders the ripening of a new ovum for the duration of its function. The so-called lactation atrophy of the uterus is not a reflex trophoneurosis, but only the result of failure of development of a new corpus luteum."

The corpus luteum appears, therefore, to fulfill every requirement of a gland with an internal secretion, according to Walthard's conception.

Recently studies have been made by many observers on the influence of the internal secretion of the ovary on metabolism. The tendency to increase in fat after ovariectomy or the menopause, has been attributed to cessation of the action of the internal secretion of the ovary. Löwy and Richter believe this to be due to diminished oxidation, while Magus and Herz incline to the view that it is due to lessened bodily exercise after castration, the result of influence on the psychic sphere of the individual.

The relation between the ovarian function and osteomalacia has long been observed, and numerous experiments have been made to explain such relation. Adler has recently shown that increased ovarian function causes an increased elimination of calcium salts and that a diminished ovarian function causes a lessened elimination.

After the removal of the ovaries or after the climacteric, there occur in many individuals marked disturbances of the nervous system, among them disturbances of the central nervous system, such as changes in disposition and dizziness, also disturbances of the spinal system, such as an increase of the subcortical reflexes, and, finally, of the sympathetic system, such as hot flushes and sweating. Whether these symptoms are to be attributed to absence of the ovarian hormone is not clear, inasmuch as we do not know whether the ovarian hormone acts on the autonomous or on the sympathetic systems, or whether it acts on both. Walthard states that from more recent observation of different au-

thors it is not improbable that the ovary elaborates different hormones which act selectively in their influence on metabolism, some antagonistic, others supplementary, to the hormones of other glands of internal secretion, and that the ovary should be placed in the group with the pancreas and the parathyroids which, in their physiological action, give out stimulant impulses for the autonomous system and inhibitory impulses for the sympathetic system.

From a review of recent literature the opinion that the internal secretions of the different organs react on one another seems to be gaining support. By certain glands, or groups of glands, acting supplementarily, and others antagonistically, there is formed a delicate balance between them, which is maintained in perfect states of health. It would appear, therefore, that the problem of the action of the internal secretions is very complex; and this view would go far to explain the many disappointing incongruities which confront us when we attempt to apply the known facts in the application of organotherapy.

The clinical results thus far published have been much at variance, and this was formerly due to the fact that the entire ovary was employed, the greater part of which must necessarily have been inert. Since the employment of the corpus luteum more encouraging results have been reported, but, still, the indications for ovarian therapy are comparatively limited. The most encouraging results have been obtained in relieving the symptoms of the menopause; and alleged good results have been obtained in certain cases of dysmenorrhea.

From what we know of the influences of the corpus luteum on menstruation it should be of advantage in amenorrhea. Reports from different clinicians have shown that the results from its use are often very disappointing. Theoretically, corpus-luteum products obtained from pregnant animals should be of use in threatened abortion, especially in the early weeks, where nidation is imperfect; and it has been much employed for that purpose. My own experience in its use has been far too limited and the results too much at variance to give any personal opinion as to the clinical value of the corpus-luteum preparations for this purpose. Favorable reports have recently appeared from its use in several of the nervous disturbances which occur in early pregnancy, notably in the vomiting of pregnancy, but these favorable reports are still too few to base an opinion on.

We must, therefore, still regard the subject of ovarian therapy as being in the experimental stage; and what is desirable at this time is a careful study and clinical classification of cases, and a systematic observation of results over a considerable period of time, instead of attempting to draw conclusions from the haphazard administration of the preparation in occasional isolated cases, only after everything else has failed to give relief.

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DISCUSSION

DR. F. L. ADAIR (Minneapolis): Dr. Rothrock's scholarly and complete résumé of this subject does not leave a great deal known about it to be said. This is a fine subject for speculation, and when we get down to the actual concrete facts there is not so much that is definitely known. On account of the very delicate and close relationship between the so-called organs of internal secretion, it is rather difficult to conceive how the haphazard administration of these so-called extracts of glands of internal secretion will enable us intelligently to influence this very delicate mechanism until we know much more about it. When we consider the interrelationship between the ovary and the general female sexual changes, such as the changes in the mammary glands, the relation to the hypophysis, the adrenals, and pancreas, it seems a good deal like working in the dark to administer the dry extracts of corpus luteum or ovarian extract, and particularly when we administer them by mouth, where these delicate substances are subjected to the influence of the digestive ferments, hydrochloric acid, and the intestinal ferments. It would appear that we need to know more about the delicate mechanism before we can expect a great deal from these substances when administered for therapeutic effect.

I went over the literature, particularly from the standpoint of therapy, and I found some of the conclusions of Burnam relative to its use. He found that in his work there was no toxic effect where the corpus luteum was given by mouth, but if given intravenously or subcutaneously there might be toxic effects. He also

found it valuable in controlling the symptoms of the menopause. It is likewise valuable in cases for the stimulating of ovarian secretion. This deficiency of ovarian secretion produces various clinical results. In some cases there is disturbed menstrual flow, in others there is dysmenorrhea, and in still other cases there are changes in the general metabolism. He also found it of advantage in young women with amenorrhea and in obese women; and he suggested that it would possibly be of value in cases of unexplained sterility, and in cases of repeated abortion. The latter suggestion is a deduction from the work of Fraenkel, which has been confirmed by Dr. Geo. Goeb on the influence of the corpus luteum on the endometrium and the so-called maternal placenta, in other words, the decidual formation in the uterus and the early development of the ovum.

It has been found that in functional amenorrhea the administration of corpus luteum is of value. It is of value in dysmenorrhea, particularly that type supposed to be of ovarian origin. In the neurotic disturbances of the menopause and in neurasthenia the symptoms were relieved by its use. The treatment of repeated abortions and hyperemesis by the administration of corpus luteum extract were also mentioned by Dr. Rothrock.

There is a recent observation by Iscovesco on the use of alcoholic extract of corpus luteum and ovary. In forty-eight cases of dysmenorrhea injected with extract of corpus luteum two weeks before the menses were due, all but eight were relieved. He used it in six cases of amenorrhea, and in many cases with ovarian insufficiency. He injected lipoids and pointed out that they caused no anaphylactic reaction. The treatment should be gradual and kept up for a long time. In contradistinction to Dr. Burnam and others, he administered it subcutaneously and used it in alcoholic extracts. Burnam believes that we do not use large enough doses. He used 120 grains.

The surgical therapeutics consists largely in ovarian transplantation. In the different diseases where in certain individuals it is necessary to remove the adnexa, sometimes it is possible to transplant the ovary of that individual into a different portion of the body. These efforts have met with varying success. They have been the most successful of any of the ovarian transplantations. Those of transplantation from other individuals have met with practically no success.

I ran across a rather interesting series of experiments which have little to do with therapeutics, but yet are interesting from the standpoint of heredity. These men were able in a few instances by transplanting ovaries in guinea-pigs to transmit characteristics of the animal from which the ovaries were derived to the offspring. They transplanted the ovaries of a guinea-pig into an albino guinea-pig and were able to transmit characteristics of the donor of the ovaries to the offspring.

A CASE OF SYSTEMIC BLASTOMYCOSIS, WITH THE STOMACH AS A POSSIBLE PORT OF ENTRY

By W. F. SHILER, M. D.
DEVILS LAKE, NORTH DAKOTA

AND

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J. W. COX, M. D.

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The first general infection with blastomycetes was recorded by Busse¹ in 1894. Montgomery and Walker² reported a second case in 1902. Stober³ reviewed thirty-six cases and summarizes their characteristics in a paper published during 1914.⁴ Montgomery and Ormsby⁴ have a report of twenty-two cases published in 1907. A few of these latter cases are included in the Stober report. K. Goto⁵ reports quite extensively a case of blastomycosis of the meninges. A heart lesion due to blastomycetes is recorded by Hurley⁶ while other cases are reported by Powers and Hill^{7,8}. During the past year, Wade and Bell⁹ reported five cases from New Orleans. Most of the text-books have little or nothing to offer concerning this rather infrequent condition. The majority of the infections have been observed in or near Chicago; however, cases have been found in Indiana, Wisconsin, Nebraska, California, Louisiana, Texas, Massachusetts, New York, Maryland, Minnesota, Michigan, Iowa, Kentucky, Colorado, and Utah. Cases also have been reported from Canada, South America, British Isles, France, Germany, Italy, India, and Japan.

Etiology.—With a few exceptions, the cases reported occurred in males. The age incidence is chiefly during the third decade. There is no demonstrated heredity. The American cases were chiefly among Italians and Poles, there apparently being a definite relation to the hygienic surroundings, nearly all living under unfavorable circumstances and giving a history of hard work and exposure. In some a history of injury has been elicited, but this is unusual.

Bacteriology.—The blastomycetes stand intermediate between the bacteria proper and the higher fungi. The organism is a round or oval cell, which varies in size from 3 to 5 microns up to 30 or more in diameter, averaging about 20 microns. The central part is clear with a refractive capsule. Reproduction is by budding and by mycelium-formation. Cultures develop readily on the ordinary media at both room and incubator temperatures. The disease can be produced in animals by inoculation.

Pathology.—The organism has been found in the arynx, trachea, lungs, pleura, myocardium, liver, spleen, pancreas, kidneys, adrenals, lymph-glands, bones, joints, subcutaneous and cutaneous tissue, and brain and cord, as well as in the urine, feces, sputum, blood, spinal fluid, and prostate secretion. There is a round-celled infiltration, often giant-cell formation, and central

necrosis, the last-named not being as marked as in tuberculosis.

Symptomatology.—In the majority of the systemic cases the respiratory tract has been the accepted point of entrance, and there has been no good evidence pointing to the digestive tract. The first symptoms have nearly always included cough, expectoration, often bloody, and dyspnea. Cutaneous and subcutaneous lesions, abscesses, and discharging sinuses or ulcers have been rarely absent in the reported cases. Emaciation, anorexia, weakness, and prostration are quite constant. Pain is variable. The temperature is irregular, ranging as high as 103° in some cases, with the pulse and respiration corresponding. Chills and sweats occur. Usually there is anemia, of varying grade, with some reduction in the erythrocyte count. A moderate leucocytosis is the rule. The differential count is not characteristic,—8% myelocytes were observed in one case. Albuminuria has been noted. Arthritis and spondylitis occur. Diarrhea has occurred.

Diagnosis.—The diagnosis is made positively by finding the organism, which should be cultivated and used in animal inoculation. The disease has been most frequently mistaken for tuberculosis. Occasionally the skin lesions may be mistaken for lues or epithelioma. Coccidoidal granuloma must be differentiated, the course of the latter being shorter and the lymphatic tissue more frequently involved. Aside from the above, various diagnoses have been made, such as pyemia, nephritis, and articular rheumatism. In most of the cases the condition has been suggested by the presence of the abscesses, and first confirmed by finding the organism in the pus. Differentiation may be aided by the use of blastomycotic vaccine.

Course and Prognosis.—The course is progressive, and the disease is usually fatal, 90 per cent mortality being the usual figure given. The duration varies from two and one-half to 30 months, the average being eleven months. In one case death occurred thirteen years after the appearance of the first nodules.

Treatment.—Potassium iodide and copper sulphate are the drugs which have been most generally used—both suggested by Bevan. General surgical measures, general hygiene, radiotherapy, and Röntgen ray all have been suggested and used. Vaccine therapy was used with good results in one case; in another there was no appreciable response.

Case-History.—G. D. C. The patient entered the hospital on February 4, 1916. A Scotch-American farmer, aged 38; married, no children. Homesteaded in North Dakota a number of years ago, coming from the northeastern states. Father died of "dropsy" at 76; otherwise the family history is negative. The patient had the ordinary diseases of childhood. He denies venereal disease. Had "blood poisoning" in the left arm twenty-one months previously. He was sick at that time about a month (his relatives have stated that

he has never been so well since that time). In July, 1915, he was struck in the lower part of the abdomen by a lever on a farm implement, which knocked him breathless for a short time, but he went on with his work. In general, the patient's appetite has been good, bowels constipated, takes some coffee each day, uses very little alcohol, and chews some tobacco. Has been sleeping poorly lately. His best weight was 225 pounds, which he weighed in 1914. At present he weighs 145 pounds, and he has lost weight more rapidly during the last few weeks.

In October, 1915, he had an attack of pain low down on the abdomen in the midline. It came on while he was at work, lasting two to three hours. He did not vomit. No soreness followed. In November, while at

his operation only it was high up around the umbilicus. At the present time he is unable to eat; everything turns sour on his stomach, and he belches considerable gas; the pain bothers him more at night; he is nauseated, but does not vomit. Milk and sweets are particularly bad for him to take. At present the bowels are loose.

Physical Examination.—Patient is a middle-aged man showing marked loss of weight. The skin feels hot and dry to the touch. The pupils are equal and react. The conjunctivæ are reddened. The teeth are in fairly good condition. The tongue presents a whitish coating with red papillæ showing through. Examination of the lungs shows no dullness, no fixed râles, and no friction sounds. The heart is pushed upward. There is diffuse apex beat in the fourth interspace. Over the body of the heart there is heard a short harsh murmur occurring toward the end of the systole. A cardio-respiratory murmur is heard in the second interspace

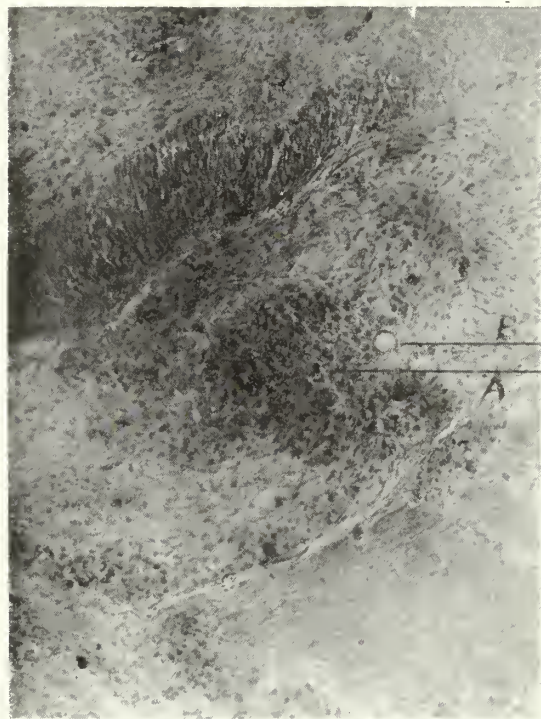


Fig. 1. Section of the musculature of the stomach. A, focal collection of endothelial leucocytes. B, organism, 30 microns in diameter. E + H \times 62.

work, he had an attack which was similar in every way. A month later, while hauling grain, he had a third attack, similar to the others, except that he vomited twice. There were no chills or fever at any time. About December 15 he consulted a doctor, who diagnosed appendicitis and operated. After the operation the doctors told him that they had not removed his appendix, but had noted some ulceration of the bowels and had removed about a gallon of fluid. The laparotomy wound healed nicely, but, while still in bed, he had fever and some cough which lasted three weeks. This was attributed to "la grippe," and it caused him to lose considerable weight and to feel weak. One month after his operation, he went home, apparently in good condition. Later his abdomen began to swell, and about a gallon of fluid was removed (January 21). Following this, his pain started again much as before

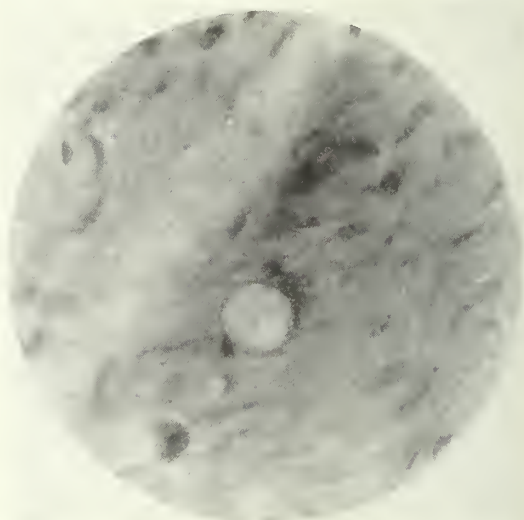


Fig. 2. Showing the organism of blastomycosis in the tissue. E + H \times 600.

on the right. The abdomen is protuberant and tense. There are some enlarged veins on the surface. An operation scar is seen in the right lower quadrant. A fairly firm and movable subcutaneous nodule is seen just above and to the left of the umbilicus. There is a scar of a puncture wound low down in the midline. There is some tenderness in the epigastrium. The upper margin of the liver comes to the fourth rib. On percussion the abdomen shows an area of dullness which comes well up. Over this dullness a fluid wave is obtained. The axillary glands are enlarged and firm. No other glands are palpable. The spinal column shows no abnormalities. There is some roughness of the tibia; no tenderness.

On the following day the abdomen was tapped, and over two gallons of an amber-colored fluid were removed. After removing the fluid, the liver came down, and the heart resumed its normal position. The lower portion of the abdomen was now found to remain full. On palpation an irregular, soft semifluctuating mass was seen. A sort of crepitation and gurgling was

felt beneath the fingers. Peristalsis was visible. The enlarged veins remained after tapping. The subcutaneous nodule was excised for section and diagnosis. While in the hospital the patient complained considerably of burning in the stomach and belching of gas. The fluid gradually re-accumulated, and required removal again after nine days. The character and amount of this was about the same as before. Rectal examination showed some internal and external hemorrhoids, and high up an irregular firm nodular mass, only slightly movable and not tender. (Fig. 3 shows abdominal findings after this second paracentesis.) On palpation one got a feeling of crepitation and gas beneath the fingers. On percussion a resonant note was obtained. Auscultation gave clapotage. Peristalsis was plainly visible, and the mass changed shape while watching it, probably due to gas passing in the intestinal coils. In the lower right quadrant the mass seemed to become more firm. Fluoroscopic examination showed a small residue

and small, 10 per cent; transitional cells, 7.6 per cent; mast cells, 0.4 per cent; eosinophiles, 0.0 per cent; high percentage of leucocytes of Arneith's class 4 and 5; no nucleated abnormal red cells found; no myelocytes.

The stomach contents showed normal amounts of free and total HCl. No blood found. No blood found in the examination of feces.

The ascitic fluid is amber-colored, cloudy, partially opalescent. On standing, it formed a small coagulum and a scum. Specific gravity, 1.016. It contains about 2 per cent albumin as estimated by the Esbach tube. The sediment shows a few epithelial cells and about an equal number of mononuclear and polymorphonuclear leucocytes. No eosinophiles found. At this time no further examination of fluid was made, but it was kept sterile at room temperatures.

Two laboratories independently made a diagnosis of spindle-celled sarcoma from sections of the subcutaneous nodule excised from the abdomen.

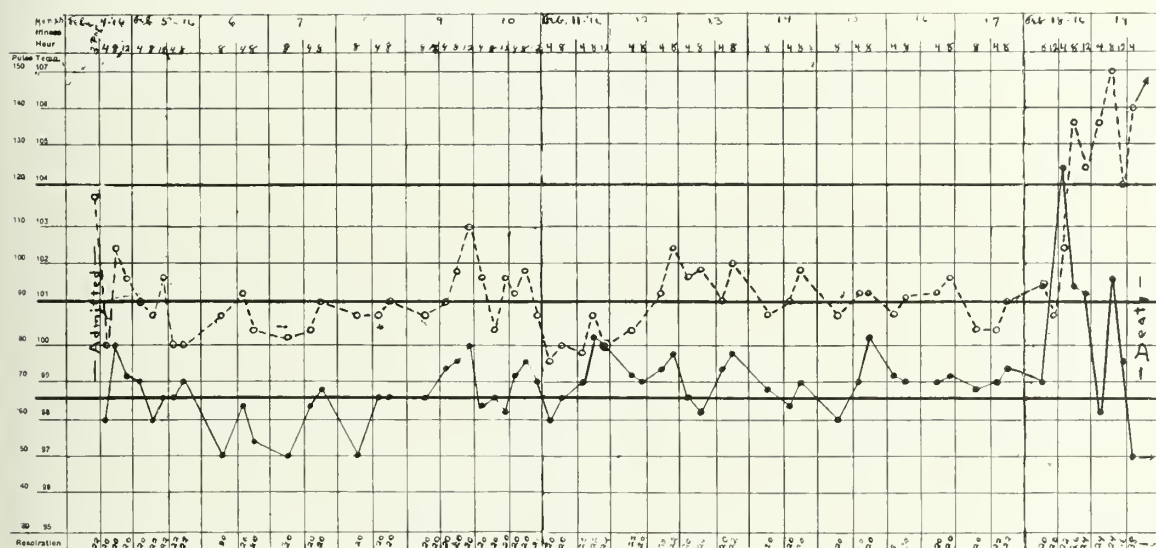


Fig. 3. Chart of a case of blastomycosis. Broken line indicates the temperature; solid line indicates the pulse.

in the stomach after three hours. Peristalsis is active. There are no filling defects in the stomach. After bismuth leaves the stomach it appears to pass over a long narrow space downward and outward, which enlarges into a small sacculum and then turns sharply to the left.

The von Pirquet skin test is positive after thirty-six hours, and a subcutaneous injection of 6 mg. of old tuberculin gave a reaction which was considered negative.

When fluid was accumulating the patient passed as little as 200 c.c. of urine in twenty-four hours; this was clear, amber, strongly acid, with specific gravity 1.025. It showed the faintest trace of albumin, no sugar, no bile, phosphates increased, pus cells a few more than normal, no red-blood cells, and a scattering medium-sized hyaline cast. The urine gave the hema-urochrome test for malignancy.

Blood Examination.—Erythrocytes 5,000,000; leucocytes, 12,000; hemoglobin, 70 to 75 per cent (Tallquist); polymorphonuclears, 82 per cent; lymphocytes, large

Diagnoses considered were tuberculosis of the peritoneum and malignant disease. Lues was considered entirely unlikely. The temperature and the evident inflammatory characteristics of the ascitic fluid were then supposedly explained by assuming previous infection due to invasion of the peritoneal cavity at a previous operation or tapping.

The patient continued to become weaker, and died on February 19.

AUTOPSY

Autopsy was held four hours after death. Head and spinal column not opened. Body is that of a well-developed, poorly nourished man about 180 cm. long. Livor mortis marked in dependent parts. Pupils are dilated and equal. Conjunctivae are pale. Superficial head is without evident lesion. Ear and nasal cavities are clean. Teeth are poor. Mouth is clean. Cervical and axillary lymph-nodes are palpable. Inguinal lymph-nodes are enlarged. Abdomen is prominent. Palpation shows a large mass in the lower abdomen. The

skin below and medial to the anterior superior spines shows three small round pink scars, two on the left side and one on the right. These are probably due to the introduction of a trocar. A scar about 9 cm. long is seen over McBurney's point. A small incised wound partially healed is seen above the umbilicus. The anterior crest of the tibia slightly roughened.

Peritoneal Cavity.—The peritoneum is not as smooth as normal, and is glistening. It presents no tubercles or adhesions. The appendix is about 5 cm. long and without evident lesion. Foramen of Winslow is closed. Spleen is bound down by a fibrinous exudate. Abdomen contains 1,500 c.c. of greenish-yellow seropurulent exudate. Intestine not collapsed. Omentum not recognized as such.

Pleural Cavity.—Right lung inflated, and fills entire cavity. Left lung compressed. Pleura on the left side is dull. Left cavity contains 800 c.c. of a cloudy fluid. No adhesions. Right lung is larger than the left. No fluid. Pleura smooth and glistening.

Pericardial Cavity.—Heart is apparently normal in

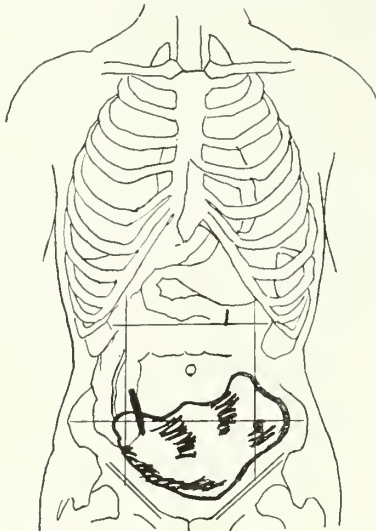


Fig. 4. The mass as felt through the abdominal wall after aspiration.

position and in firm systole. Pericardium is smooth and glistening. Pericardium shows no adhesions. Cavity contains a few c.c. of clear amber fluid.

Heart.—Right and left sides of the heart are in systole. The right ventricle contains one post-mortem clot 4 cm. long. Valves found mechanically perfect, and free from vegetations. Right ventricular wall is 0.4 cm. thick. The walls of the left ventricle are 1.2 cm. thick. The endocardium is smooth and glistening. Heart muscle is dark brown, firm in consistency.

Lungs.—The right lung is larger and heavier than the left; both are crepitant. Anterior surfaces of each are pink and fresh in appearance. Posterior surfaces are dark red. Anterior portions of the right lung are more crepitant than the left.

On section: From the posterior portion of the lungs a frothy reddish fluid can be expressed. Apices of both lungs are free of lesions. Mucous membrane of the bronchi is free from lesions. Peribronchial lymph-nodes are enlarged slightly; firm and dark.

Gastro-Intestinal Tract—Stomach.—The stomach is

not collapsed; firmly adherent to the surrounding organs except on the anterior and posterior surfaces. When the stomach is raised and the hand inserted from behind and above, a purulent exudate is seen to come from the left side, from behind the stomach, and from around the gall-bladder. The hand enters a large cavity about 15 cm. in diameter, probably the remains of the lesser omental cavity. The cavity contains a purulent exudate.

On section: The walls throughout are thickened, some portions are as much as 8 mm. Mucosa shows no abnormalities except one spot on the posterior surface which shows evidence of an old ulcer. This is removed for microscopic examination. Cardiac and esophageal openings found patent. The adhesions matting together the loops of small intestine and occurring on the under surface of the liver and about the gall-bladder are somewhat delicate. Those surrounding the duodenum, colon, sigmoid and rectum are extremely dense and have evidently been present for some time. These dense adhesions compose the firm mass felt upon rectal examination.

Duodenum.—On account of the dense adhesions, it is impossible to isolate the duodenum completely. It is opened in situ, and extends directly downward for about 20 cm., where it seems to dilate. It then turns abruptly to the left. No pathological lesions in the mucosa.

Intestines.—Intestines are taken out en masse. Walls are greatly thickened (3 to 4 mm. in places) and firm. Mesenteric lymph-nodes are enlarged and firm. Large intestines are adherent especially at sigmoid flexure and at the rectum.

Liver.—The surface of the liver is coated with a fibrinopurulent exudate which peels off readily. The liver is not adherent to the diaphragm except in small areas on the left lobe. The under surface of the liver is adherent to the surrounding organs. The consistency is considerably increased.

On section: Liver cuts with increased resistance. Marking of lobules distinct. Reddish brown.

Gall-Bladder.—Small, firm and adherent. Wall thick; cavity contains 15 c.c. dark-green fluid. No stones.

Spleen.—Normal in size, somewhat soft, not adherent. No foci.

Pancreas.—Small in size. Firm in consistency. No foci found.

Kidney.—Right kidney is apparently normal in size, somewhat soft.

On section: Markings distinct. No foci found. Capsule peels readily.

Left kidney is larger than right, otherwise manifesting same condition.

Bladder.—Posterior surface somewhat thickened. Seminal vesicles are firm and hard.

Rectum.—Thickened. Well down into pelvis.

Retroperitoneal.—Glands are enlarged and firm. No foci. The masses felt by rectum are dense adhesions about the promontory of the sacrum.

Portions of the liver, kidney, stomach, appendix, seminal vesicles and omentum saved for microscopic examination.

PATHOLOGICAL REPORT

Ascitic Fluid.—Specimen consists of about 60 c.c. of slightly cloudy, amber fluid. The examination of a centrifuged specimen shows numerous rounded bodies

about the size of a red-blood cell. When treated with one per cent potassium hydrate solution, they show a homogeneous, doubly contoured, refractile capsule. Within these bodies can be seen a granular center surrounded by a clear zone. Jenner's stain frequently shows a minute horse-shoe-shaped body in the center, which stains blue. No budding processes or mycelia threads found. The bodies are positive for Gram's stain. In addition to these bodies there can be seen two varieties of cocci; both appear to be gram positive. One is a diplococcus, and the other appears to be in the form of a chain. The diplococcus has not yet been identified. It grows slowly at 22 and 37 degrees Centigrade. It appears as minute pin-point areas on agar blood serum, dextrose agar, and glycerine agar. In neutral and acid broth it shows a fine granular growth at the bottom of the tubes. No gas formed. The chain-formation grows like a form of streptococci. The inflammatory elements found in the fluid consist of an equal number of endothelial and polymorphonuclear neutrophilic leucocytes.

The culture of the ascitic fluid for spores and mycelia is negative on blood serum, dextrose and lactose agar, glycerine agar, and neutral and acid bouillon. The findings at autopsy in a guinea-pig and white rat inoculated intraperitoneally with ascitic fluid, are negative after twenty-one days. A rabbit shows systemic coccidiosis after twenty-one days. This, however, is probably due to infection prior to inoculation with the ascitic fluid as the control rabbits gave similar findings. The ascitic fluid after twenty-one days in the ice-box shows the presence of hyphæ. The bacterial content is increased.

Stomach.—The specimen from the wall of the stomach is 9 mm. thick; and the mucosa and submucosa are 5 mm. thick. The mucosa shows an ulcer 5 mm. deep covering an area 3 mm. by 12 mm. It has a punched-out appearance. The bottom of the ulcer is smooth, with rounded edges. It extends to the muscularis. The peritoneal surface is smooth and glistening. The subperitoneal tissue is thickened. On section, the mucosa, submucosa, muscularis, and subperitoneal tissue can be seen distinctly. Specimen cuts with considerable resistance, and is grayish in color. The cut surface is smooth with distinct markings.

Microscopic examination: The characteristic picture consists in a diffuse infiltration of the stomach wall with endothelial leucocytes. These are massed in focal areas about 0.2 to 0.5 mm. in diameter, especially between the muscle cells. The area around the ulcer shows no acute inflammatory exudation. Extending throughout the stomach wall can be seen organisms from 5 to 30 microns in diameter. These organisms have a doubly contoured refractile capsule and frequently contain granular substances surrounded by a light area. The endothelial leucocytes frequently are 40 microns in diameter, many of which contain a single organism as large as 10 microns in diameter. The connective tissue throughout the stomach wall is greatly increased. No diplococci or streptococci are found in the stomach wall. The surface of the ulcer is clean and shows no necrotic tissue.

Bladder.—The wall of the bladder is 8 mm. thick; firm in consistency, grayish in color, and cuts with increased resistance. The lining is rough and is stained yellow.

Microscopic examination: The increased thickness of the bladder wall is due to connective-tissue proliferation and a marked infiltration of endothelial leucocytes. The same focal areas are found here as in the stomach. Organisms are found in the same position as in the stomach.

Lymph-node.—Specimen is 4 by 2.5 by 1 cm. in size. The surface is rough and shows adhesions; the consistency is increased; and the surface is brownish gray. On section: Surface is grayish and mottled with areas of brown, and trabeculae are distinct.

Microscopic examination: The lymph sinuses are filled with many endothelial leucocytes and polymorphonuclear neutrophilic leucocytes. Streptococci and diplococci are found free and within polymorphonuclear neutrophilic leucocytes. A few of the doubly contoured refractile organisms are found within the endothelial leucocytes. The capsule and trabeculae are increased in size by connective-tissue proliferation.

Kidney.—The capsule is not adherent. The markings on the surface of the kidney are distinct. On section the cortex is found 6-7 mm. thick. The labyrinth of the cortex is found slightly darker than the medullary rays. The glomeruli stand out as brown pin-point areas. The consistency of the kidney apparently is not increased.

Microscopic examination: The kidneys are negative for the inflammatory processes. No areas of degeneration found. No organism found.

Liver.—The capsule is covered by a soft whitish exudate which can be scraped off, leaving a thin transparent capsule. Markings are distinct beneath the capsule. On section the consistency and resistance are apparently somewhat increased. Cut surface is grayish and finely granular. Branches of the hepatic vein are patent. Lobule markings are distinct.

Microscopic examination: The surface of the liver is covered with an acute inflammatory exudate, which contains both streptococci and diplococci. The connective tissue is increased around the portal vessels, with a marked infiltration of lymphoid cells and a few endothelial leucocytes. The doubly contoured organisms are scarce.

Appendix.—The appendix is 1 cm. in diameter and 5 cm. long. The surface is covered with fibrinous adhesions. The consistency is increased. On section, it cuts with the same resistance as the stomach and bladder walls. The surface is grayish in color, and the markings of the cut surface are distinct. The lumen is not patent. The increased thickness is apparently uniform throughout the coat.

Microscopic examination: The same microscopic picture is seen in the appendix as is found in the stomach wall and bladder wall.

Omentum.—The specimen consists of a mass of grayish tissue and firm in consistency, and the surface is rough and covered with a soft grayish exudate. On section, it cuts like a green pear. The cut surfaces show grayish bands of interlacing fibers between which can be seen yellowish pin-head areas.

Microscopic examination: The surface of the omentum shows a fibrinous membrane, in the meshes of which can be seen a few polymorphonuclear leucocytes. Diplococci and streptococci can be seen within and without the leucocytes. Capillaries below the exudate are dilated. The remainder of the specimen consists for

the most part of proliferating fibroblasts, many endothelial leucocytes, and a few polymorphonuclears and occasionally a giant cell. The same organisms are seen both within and without the endothelial leucocytes, as in the sections from the stomach, bladder, lymph-node, and appendix.

Marchi's stain shows no evidence of fatty degeneration of the endothelial leucocytes.

Wright's stain shows no marked eosinophilic or mast-cell infiltration of the tissue examined.

MICROSCOPIC FINDINGS

1. Blastomycetes in the stomach wall, liver, lymph-node, urinary bladder wall, omentum, appendix, and ascitic fluid.

2. Budding forms within and without endothelial leucocytes.

3. Acute inflammatory process involving peritoneal covering, probably due to traumatic infection of the peritoneum with streptococci and unknown diplococci.

CONCLUSIONS

1. A case of systemic blastomycosis is described, which is the first case to be reported from the state of North Dakota.

2. The case is peculiar in that it lacked the

cutaneous and subcutaneous lesions which have been quite constant in the other reported cases, and which have led to a diagnosis.

3. It is the first reported case having recurrent ascites as a finding.

4. The stomach ulcer with the localization of the blastomycetes in the stomach wall suggests this as a portal of entry. The gastro-intestinal tract has not heretofore been seriously considered as a point of entrance.

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THE PATHOLOGY AND ETIOLOGY OF GOITER*

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ST. PAUL

"Goiter" is a rather indefinite term, which applies generally to enlargement of the thyroid. We speak, for instance, of malignant goiters,—a chapter, by the way, most interesting pathologically, as there are not only forms like sarcoma, endothelioma, or, for instance, osteochondrosarcoma, or simple carcinoma, cylindrical-cell carcinoma, malignant papilloma, and cystocarcinoma, but also forms like the proliferating struma of Langhans with only clinical, but not microscopical, malignancy. Then there is that form of apparently simple colloid struma, which produces metastases in bones, etc. Furthermore, there is the parastruma, which originates from the parathyroids and contains glycogen as its characteristic feature. The malignant degeneration of this goiter, the carcinoma parathyroideum, was observed by Kocher. Then there is the large-celled small-alveolar struma postbranchialis, which Getzowa showed to originate from the lateral thyroid anlage. Finally, there are the pavement-cell carcinomata, with prickle cells, probably starting

from the pharyngeal portions of the thyroglossal duct.

I take it for granted that, when the subject was given me to treat, malignant goiters were not meant to be discussed at length. After the exclusion of the neoplasms the goiter can then be termed an enlargement of the thyroid, due to functional disturbance of the gland. In laying stress upon the disturbance of the function, the epithelial elements come into the foreground of our interest, and disturbances primarily and principally of the stroma-like acute and subacute thyroiditic swellings, or the very chronic forms, the "iron-hard struma of Riedel," can thus also be eliminated after simply mentioning them.

The goiter proper, in its stricter sense, now remains; and it is the pathology of the parenchyma which becomes the base of our considerations and of the grouping of our subject. The follicles of the normal thyroid at rest are about large enough to be seen by the naked eye. They have a lining of cubic or flat epithelium, and contain a dense colloid in their lumen. The alterations in these follicles can be, first, a hypertrophy

*Read before the Hennepin County Medical Society, September, 1916.

of the vesicles, which means an enlargement of the acini; secondly, a hyperplasia producing numerous new acini; and, thirdly, a hyperplastic condition of the cells in the acini, with the result that the cells become columnar and so numerous that papillary infolding of the follicular wall occurs. The first, the hypertrophy of the vesicles, represents an increase principally of the colloid in the vesicles. In the beginning of the process there is mostly, though not always, a noticeable activity in the cellular elements. The macro- and microscopic picture of the gland may be entirely normal in appearance, apart from the enlargement of the vesicles and the bulky colloid in them. This increase of the colloid may reach a high degree. The epithelium in the advanced stages has the tendency to become very flat and atrophic. Thus we reach a picture which tells us of an impaired and reduced function, together with an undue retention of secretory material. It is the simple non-toxic torpid goiter. The impairment of the function is also revealed to us by the condition of the colloid, which is poor in iodine and of reduced physiological action. The function of the gland may become so insufficient that all stages toward myxedema may be observed.

If, on the other hand, the epithelial proliferation in the acini becomes overactive and reaches a high degree, the colloid becomes more transparent and finally disappears. In other words, a marked hyperplasia allows us to presume, in addition to an increased secretory activity, a distinctly increased absorption of the stored colloid. Thus we observe in these cases that the body becomes flooded with the thyroid product. A hyperthyroidism occurs. The vesicles collapse, which increases the tendency to infolding of the epithelial lining. Apparently active and newly formed, branched and tubular lumina are seen; and the cells are high and deeply staining. Clinically, we have the picture of exophthalmic goiter.

As mentioned before, even the torpid looking simple goiters usually are preceded by a more active primary stage, due, as experimental research leads us to conclude, to numerous infections, not of the thyroid itself as much as of the body in general. The thyroids of man and of many animals were examined under different conditions, and it was shown that infections produce microscopic pictures indistinguishable from chronic colloid hypertrophy and hyperplasia, on the one hand, and, on the other, again, from certain acute infections identical with acute cellular

hyperplasia and rapid colloid absorption, as seen in exophthalmic goiter. Not all infections act alike. For instance, the staphylo-, strepto-, and pneumococci produce very little or no hyperplasia, while a most exuberant cellular activity was seen in acute infections of, or experimental injections with, coliform bacilli, diphtheria bacilli, micrococcus catarrhalis, typhoid, dysentery, anthrax, glanders, tetanus, acute tuberculosis, secondary lues, malaria, measles, bronchopneumonia, and whooping-cough. Even here and there necroses and hemorrhages in the thyroid were observed in these infections; and a complete absorption of the colloid in the course of a few weeks or even days increased the resemblance with the microscopic picture of exophthalmic goiter to a perplexing degree.

A number of other infections produce more moderate hyperplastic changes, as they are seen in goiters of moderate cellular activity. These forms are termed by some chronic colloid hyperplasia, by others regenerating goiters. We see here large and small acini, which all are filled with a dense colloid, while the epithelium appears to be more or less stimulated, the increased activity being represented by a high cuboidal form of the cells and a deep-staining quality of the nuclei. Clinically these microscopic pictures represent goiters of more moderate toxicity and less acuteness of development. They furnish the bulk of what is termed toxic non-exophthalmic goiters. The conditions which are so far known to produce this microscopic picture are, for instance, chronic infections with coliform bacilli, chronic tuberculosis, tertiary lues, actinomycosis, poliomyelitis, scarlet fever, and meningococcic infections. This chronic colloid hyperplasia was also seen in chronic nephritis and in pernicious anemia.

Time does not allow me to go into more details. I only want to add that in all forms of hypertrophic and hyperplastic goiters we also may frequently see nodes. Some are usually called simple adenomata; others, which have a distinct capsule and are made up of small colloid-free acini and especially of tubules and strands of cells, are called "fetal adenomata." Exact researches were recently made at the pathological institute in Freiburg, Germany, where goiter is endemic. The thyroids of a large series of newborn children were examined in all detail, and the verdict was that fetal adenomata in Cohnheim's sense were never found. These nodes have to be considered as ordinary adenomatous

formations. Those adenomata of the thyroid, called adult, have the outward appearance of a node imbedded in the gland, but their microscopic picture as well as their multiplicity and great tendency to pronounced degeneration give them more the character of foci of intensified goitrous changes. The changes are perhaps due to particularly intense local results of infectious disturbances, among which necrosis, hemorrhage, and a final fibrotic change would tend to sequester a given area and surround it by a fibrous wall. This again would in itself favor a retention of the secretory products and lead this little walled-off lobule of parenchyma after a primarily irritative hyperplastic stage into semistarvation with a tendency to disintegration, calcification, and at times to liquefaction. Though I can offer this mode of formation of goitrous nodes only as a personal view, it can generally be stated that the nodes of ordinary goiter are not what Woelfler and after him numerous other writers declared them to be, that is, true adenomata, but that they are rather generally considered as local hypertrophic conditions. If we accept them as a consequence of localized injury to the gland, it should be remembered that it was demonstrated that hemorrhagic foci, becoming later on cirrhotic, are a frequent occurrence in the thyroid in acute infections.

The experimental findings are so full of suggestions that I am afraid I have consumed too much time with this phase of my subject, but I had to spend a moment with these adenomatous nodes, to illustrate our conception of this most common appearance, the nodular goiter.

If we allow ourselves to hold up infection as the underlying cause of goiter, we must admit that the last word has not been spoken. Experimentally a discrepancy was noticed in the fact that, when repeated injections of diphtheria toxin were made in horses, the hyperplasia in the thyroid, which was acute in the start, gradually decreased with the increase of the formation of antitoxin. A hyperplasia occurred only, let us keep this in our mind, when the antitoxin was deficient or absent. It would appear, as McCarrison says, that, when a toxin is not otherwise effectively disposed of, it becomes an irritant to the thyroid, and thus automatically mobilizes the forces to the extent the latter are required in the fight. The iodine apparently plays here the dominating part, which may be a direct or an indirect one.

It is difficult to imitate experimentally the great

chronicity, which is an important feature in the development of goiters. And it is also difficult to imitate the very chronic mild infections as they occur in tooth-abscesses, pathological tonsils, chronic appendicitis, cholecystitis, etc. This may be the cause for a certain difference between artificial hyperplasia and goiter.

Goiter would thus represent a reaction of the thyroid upon toxic products of certain systemic infections. The thyroid seems to be of importance for our protection in many infections. Experimental removal of the thyroid produces a reduction of the hemolytic, the bacteriolytic, the opsonic, and the phagocytic properties of the blood. Clinically, other causes for goiter, besides infection, or at least modifying factors are observed. For instance, during every pregnancy there occurs an active thyroid hyperplasia with, later on, a return to a colloid quiescent state. We often observe a mild diffuse thyroid enlargement becoming larger with each additional child, and remaining permanent. A goiter may here mean the result of a peremptory demand for increased glandular product upon a physiologically weak or nearly overtaxed gland.

Let us now see to what extent exophthalmic goiter appears related to infection. In exophthalmic goiter we usually observe as the most prominent etiological factors a neurotic condition, hereditary influences, and psychic shock. Attention is not given by clinicians in a very large measure to infection, though many striking examples are reported.

The fact that exophthalmic goiter and acute hyperplasia of infectious origin have one and the same microscopic appearance does not, of course, allow us to draw the conclusion that exophthalmic goiter is due to infection. The change in the gland may be caused by more than one form of stimulation. Nevertheless, clinically, the occurrence of exophthalmic goiter after certain diseases is well known, and some relationship between the two seems to exist. Thus a given nervous shock to a specially vulnerable nervous system at a particularly inopportune time, when the thyroid is laboring under the influence of some infection, would result in exophthalmic goiter. A nervous shock causes trembling, sweating, heart-beat, etc., long before any indirect influence through a thyroid secretion entering the blood could act. It occurs immediately. Nervous shock produces these symptoms, therefore, directly on the central nervous system. In a severe case of fright the sympathetic and para-

sympathetic systems are greatly disturbed; diarrhea and incontinence of urine may be the result. In a person with an unstable nervous system and with perhaps an abnormally responsive thyroid apparatus a nervous shock would thus have a primary effect upon the central nervous system. This effect usually wears off, but, if the irritation of the sympathetic system is severe and *the nervous apparatus of the thyroid* is perhaps especially sensitive, a thyrotoxic condition results with its exquisitely irritating influence upon the sympathetic and parasympathetic system. The latter, in return, by redoubling its stimulating effect upon the thyroid, closes the vicious circle. If thus conceived, the prompt cures after resecting four-fifths or nine-tenths of the thyroid become comprehensible, and also the return of the remainder of the gland back to normal.

The thyroid, in our estimation, thus is not only a multiplier of the nervous symptoms in Mickulicz's sense, but, after acting as intensifier for the primary nervous insult, represents, when this primary shock has worn off, the bottom cause of the existing symptoms, which are now due to a flooding of the body with the nerve-sensitizing thyroid secretion. Thus only can we understand the return of the remaining portion of the gland to a normal state after thyroidectomy. It is stretching neither facts nor imagination to suppose that an infectious condition invites the development of exophthalmic goiter by affecting the nervous apparatus of the thyroid directly.

A most important step in tracing the connection between goiter and infections would be the cure of goiters by bacterial vaccines. For this problem R. McCarrison, Captain of the Indian Medical Service (*Lancet*, Feb. 10, 1912) reports most valuable researches. As amebic intestinal infection was prevalent in his district, he tried to grow amebæ from the feces of his goiter patients, to determine if they had any relation to the formation of goiter. He found a constant bacillary growth in his cultures and tried to make a vaccine from this on beef agar. The bacteria were not an isolated pure culture but a composite one. One hundred and fifty to three hundred and fifty million were injected at intervals of seven to ten days. The results were most striking. Complete disappearance by two injections occurred in a case of uniform parenchymatous goiter of six weeks' standing. In a second case, also diffuse parenchymatous with three small adenomatous nodes, approximately of two years' standing, six

injections were made from the patient's own intestinal flora. The treatment extended over sixty days and resulted in the disappearance of the goiter with the exception of the small adenomata. The neck was reduced from a circumference of 38 cm. to 33 cm. Both individuals continued their regular occupation during the treatment. The cultures were seen to consist almost wholly of a bacillus of the colon type. With this vaccine another case was successfully treated, the circumference of the neck being reduced from 45 cm. to 36 cm., while again in this case an adenoma node remained uninfluenced.

In harmony with the findings of Farrant, McCarrison did not consider any one microorganism as specific for the production of goiter. In four cases of caries of bone from staphylococcus he used a staphylococcic vaccine. One case, a cystic goiter, gave no result. The second case, adenomatous, gave no result. The third, uniform parenchymatous of two years' standing, resulted in complete disappearance after five injections. The fourth case also gave a good result. Other vaccines had varying results. McCarrison's conclusions are based on Metchnikoff's teachings that certain microbes of our intestinal flora are harmful by reason of the poisonous substances which they produce in the intestines. By their action on proteid food-stuffs they produce poisons, indol and phenols, which are absorbed and give rise to fibrotic changes in the liver, kidneys, and arteries, and are harmful to most organs. It does not appear that any one of these microbes possesses a specific influence on the production of goiter. The conclusion, therefore, is suggested that the thyroid is called upon to combat several poisons normally present in the human intestine. When to these is added the specific virus of goiter, McCarrison says, an abnormal element is introduced and an extra strain is thrown upon the gland. Unassisted it undergoes hypertrophy in many cases, but if assisted in any one direction it is capable of performing the additional task which has been imposed upon it. On the assumption that not one of the different vaccines, which he had employed, contained the specific organism of goiter, his explanation of their action in this disease is, that they cause the disappearance of the goiter by relieving the thyroid of part of its normal work, thus enabling it, without continuing in a state of hypertrophy, to destroy the specific toxin of goiter. McCarrison's treatment of goiter with vaccine from the feces was tried in ten cases by

Gereda of Madrid (München, med. Wchnsch., 1913). Two patients were entirely cured; five patients left before the treatment was completed, these were all benefited, the circumference of the neck being from 1 to 2.5 cm. less; one stopped after the first injection. Finally, two exophthalmic goiters were treated in the same way. In the one there was a reduction in the circumference of the neck by 2 cm. in fifty days with improvement of the tachycardia. In the second case the reduction was 3 cm. in thirty-eight days.

McCarrison considers a specific goiter producing organism as a definite fact. But is it?

The Birchers, father and son, in Switzerland, seemed to have established the fact that it is the drinking-water from certain geological strata (*Molasse*) which carries the goiter-producing agent; however, more recent exact control researches by Hirschfeld and Klinger, under Prof. Silberschmidt (Corr. bl. f. Schweizer Aerzte, 1914) in the same localities where the Birchers obtained their data, and also in other ones, did not confirm these results. Rats, kept in goitrous districts, became goitrous, whether they received the water from the local or from goiter-free sources. In such goitrous localities the endemia was definitely localized to certain buildings. While water may be one of the means of transmission, it is not the most important. There exists no definite proof so far that the noxa in endemic goiter is one specific organism. The great frequency of goiter in mountainous regions and its absence at the seashore has to be recognized as a fact. In the sea-water and in sea-food iodine is comparatively abundant. Brook-trout fed with liver and heart of pigs, which is an iodine-poor food, showed enlargement of the thyroid, which disappeared in a few weeks by feeding meat of sea-fish, which contains more iodine. Still, to consider goiter as due purely to an underfeeding with iodine, as it is at times claimed, cannot be accepted in this simple manner, and some of the best authorities, like Oswald, declared against it. When we hear that in Hamburg and in Berlin, where goiter is very rare, the thyroid contains two to three times as much iodine as in Freiburg, in southern Germany, where goiter is rather fre-

quent, and considering furthermore that the thyroid has great avidity for iodine, which it needs as raw material for its secretory product, then one might indeed come to the conclusion that the colloid goiter is due to a lack of iodine, inasmuch as the thyroid might produce colloid in overabundance to gather up all the iodine available by increasing the substance which, above all, has the quality to retain it. In this way goiter could be considered to be, as one author put it, an adaptation to iodine-poor food. But how about the experiments of goiter-production? That an infection is responsible for the production of goiter is practically proven. As long as we do not have a definite organism, and so far we cannot say that such an organism does exist or must exist, it seems strange that this organism should nowhere be found near the sea-shore and so much in other districts. The airing of the sea-winds, which is given as cause for preventing the infection, is hardly plausible. In looking at things from all angles the two findings, the lack of iodine in the food in goitrous regions and, on the other hand, the definite experimental facts of goiter-producing localities, houses, etc., which establish the infectious origin with great definiteness, these two findings may both be factors in the production of goiter, inasmuch as the "underfeeding with iodine" alone would not produce goiter without infection, and, as infection without a deficiency of iodine, would not produce goiter, but that it requires a combination of the two. In infection, be it due to one particular organism, to certain kinds of organisms, or to certain combinations of infections, an iodine-poor thyroid is under an abnormal strain and may be more apt to become goitrous, by a tendency toward compensation, or as a simple pathological consequence. All this appears plausible with the facts at hand, but the existence of a definite goiter noxa, to be found principally in certain localities and acting independently from any iodine content of the thyroid, is also possible.

All these facts, which were dug out by clinical and experimental study, give us a wonderful chance to look into this interesting question, but as yet we do not quite see the answer.

RECENT DEVELOPMENTS IN RHINOLOGY AND LARYNGOLOGY*

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It is somewhat difficult for a specialist in rhinology and laryngology to address a society composed of practitioners in general surgery, medicine, and other specialties, not interested in the technical and very special work of the rhinologist and laryngologist. There are, however, some points in laryngology and rhinology in which the general practitioner and the surgeon, as well as other specialists, are interested; and I propose to take up some of the questions in connection with the modern practice of rhinology and laryngology which, I hope, will interest at least some of you.

In the past fifteen or twenty years there has occurred great progress in the development of various lines of medical work. In no branch has this advance perhaps been greater than in rhinology and laryngology.

The members of this society can recollect that twenty years ago the diagnosis and treatment of nose and throat affections was very elementary. Little was known concerning nose and throat affections and their treatment. As a result of specialization in this branch, and as a consequence of the introduction of local anesthesia (cocaine) and, later, the products of the suprarenal gland, together with other means, the diagnosis and treatment of diseases of the nose and throat have undergone a great evolution.

TONSILS AND ADENOIDS

So much has been written upon the ill effects of tonsils and adenoids that even the laity are now more or less informed concerning them and their detrimental effects. I need not dwell upon this oft-repeated story of their ill effects. Suffice it to call attention to the fact that we now know that the size of the tonsil is not the determining point in the question of removal, that tonsils which are submerged and pathologic may be, and are, as detrimental to health as those which project into the throat; indeed, I believe that they are more detrimental.

Diagnosis of Diseased Tonsils.—If diseased tonsils are not evident upon observation or covered by the anterior pillar, they may be exposed to view and examined by lifting the anterior pillar with a blunt hook, or the hook may be engaged in

one of the crypts of the tonsil and pulled into view. In children or even in adults the submerged tonsils may be well exposed by compelling the patient to gag. If around the tonsillar area there is a deeper redness or the tonsil bleeds readily and is made up of tissue of the character of granulation tissue, or contains cheesy secretion within the exposed crypts, the tonsil is diseased, and may be a focus of infection from which other infections arise, or may produce infections in the immediate neighborhood, such as pharyngitis, laryngitis, or bronchitis, or some secondary ear-affection. Ear-affections may manifest themselves in neuralgia in and about the ear, or in a slow progressive deafness.

Tinnitus aurium may be present with or without deafness, or suppurative otitis media may develop.

Such things as chronic follicular pharyngitis we no longer look upon as an entity, but as a secondary inflammation caused, usually, by tonsillar infection or infection from the nose. Cure results when the infective process is relieved. Diseased tonsils, as well as sinus infections, are fruitful causes of bronchitis and recurrent simple laryngitis.

Operations on the Tonsils.—There is no longer any question concerning the advisability of the complete removal of the tonsil in its capsule, and surgeons everywhere are practicing various methods with this purpose in view. A word concerning these operations may be appropriate.

Tonsillectomy is a very much more difficult operation than tonsillotomy, and its improper performance may be followed by poor results, though it is surprising to observe what the throat will tolerate and how little discomfort follows in many cases of unskillfully performed tonsillectomy; nevertheless, sometimes disagreeable results do follow, and then the whole operative procedure may be criticised.

In the complete removal of the tonsils it is desirable that every portion of the tonsil be removed and that the surrounding normal structures, namely, the pillars of the fauces and the soft palate, remain uninjured. It matters little what the method used provided the results are good.

*President's address, delivered before the Minnesota Academy of Medicine, October 6, 1915.

Accidental Injuries to the Surrounding Structures and Their Prevention.—In this connection a word concerning the method which has grown so popular because of its apparent ease and quickness of performance will be timely,—that is, the ingenious method of Sleuder. By this method the tonsils may often be completely and quickly removed, and to the untrained onlooker it appears to be a most skillful and simple operation. It may be successfully performed without danger in children if the tonsil projects well into

pillars, for these are attached to the vocal box and have a distinct function in fonation. The anterior pillar is of less consequence and seems to stand injury without as much danger. It often happens, however, that, as a consequence of injury to the anterior pillar, cicatricial contraction takes place, and the tongue is bound by a cicatricial band to the pillar, interfering to some extent in deglutition and giving the feeling, which is uncomfortable, of tightness. While these cicatricial contractions are not serious in

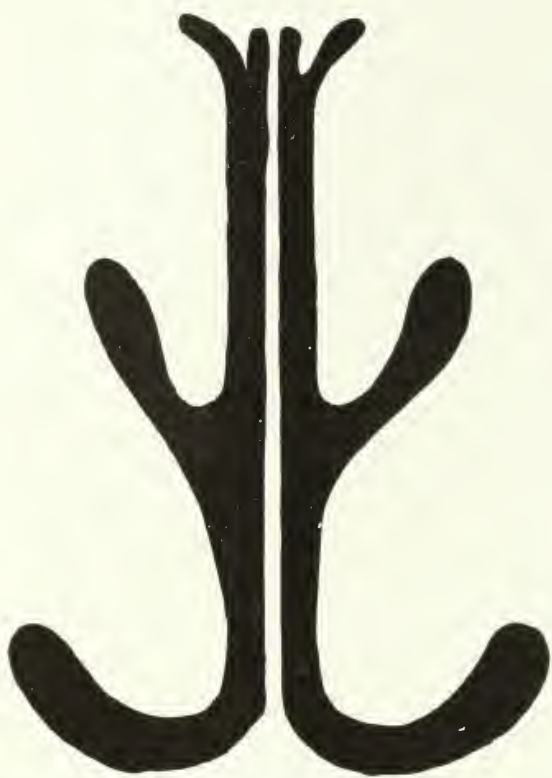


Fig. 1. The black line shows the air-space in an ideal nose. Note the shape of the turbinates and the septum, permitting a gradual flow of mucus, which may be taken up by evaporation.

the throat or where it may be projected by manipulation into the throat,—that is, in those cases where the tonsil is solid and not bound in by adhesions; but, if it is submerged and cannot be well forced out or is bound in by adhesions, the operation will result in a considerable destruction of the anterior pillar and the removal of deep muscle tissue. It is therefore an operation which is not suitable as a universal method; and even in many suitable cases in the hands of an unskilled operator, much normal tissue may be accidentally removed.

It is most desirable not to injure the posterior



Fig. 2. A shows deflection of the septum in the upper portion, interfering with drainage from the ethmoidal and other sinuses on the convex side, predisposing to frontal and ethmoidal sinusitis. B shows a deformed septum with consequent irregularities, causing defective evaporation and permitting retention and development of mucopurulent secretion.

the ordinary case, they may interfere somewhat in the case of a singer, and they may cause some discomfort and a good deal of complaint from the patient. After a careful operation such cicatricial bands will not occur, though doubtless there are some cases, for instance, in patients who have had repeated attacks of quinsy, where it is difficult to remove the tonsil without causing some cicatrix to develop afterwards. In these bad cases, however, the patient is so much im-

proved that no complaint arises. The desirability of a complete, careful operation which does not cause injury is therefore apparent.

Cicatricial Bands.—When cicatricial bands do form, something may be done to relieve the patient. I have been consulted by many patients who have had tonsil operations where these cicatricial bands have formed. Often the patient has returned to his doctor with the complaint, and no relief has been given. In these cases time will effect relief, as a rule, but immediate relief can be secured by incising the cicatricial band with a pair of scissors under novocaine anesthesia. Relief is immediate and permanent, as the retraction produced by the scar immediately pulls the band apart at the place the cut is made,

the Sleuder instrument is more frequent than following the use of the snare, but even with the snare hemorrhage may occur to an alarming extent, and every now and then we hear of fatal results. When hemorrhage occurs it is not due to an oozing, but to bleeding from distinct blood-vessels, usually from only one, but sometimes from two and occasionally from three. To prevent this mishap two things should be practiced: First, adrenalin should not be used at the time of the operation, because it prevents bleeding at that time and the bleeding may not be discovered; and, secondly, immediately after enucleation of each tonsil the anterior pillar should be drawn away and the cavity ex-

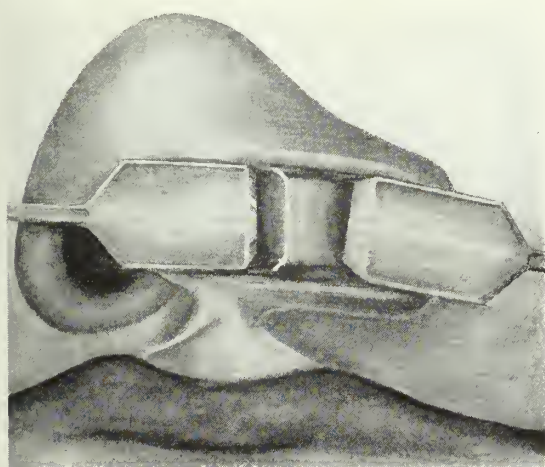


Fig. 3 shows the radical antrum operation with the sharp bony projection exposed.

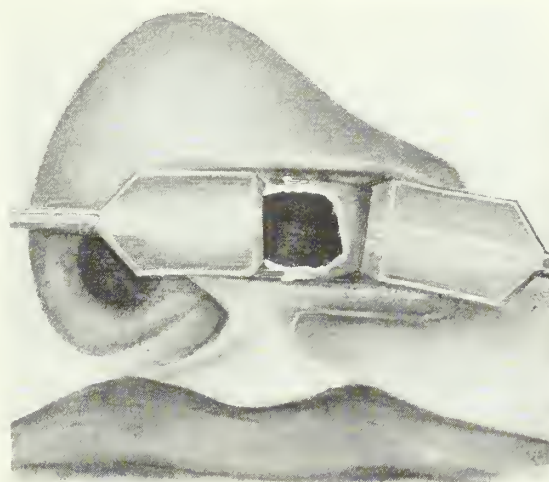


Fig. 4 is the same as Fig. 3 after the bone has been removed anteriorly and along the nasal wall under the inferior turbinate.

and it does not become reattached, as the traction existing prevents.

The accidental removal of the uvula is an occasional, but an unnecessary occurrence. Sometimes we are consulted by patients who have thus lost their uvula, and, though not inconvenienced by its loss, they fear that in some way they may be handicapped. I have never seen a case in which any detriment to the patient's voice or other function was discoverable; nevertheless, it is an embarrassing accident and one to be avoided. If during the operation the surgeon will always wipe away the blood and observe as to whether or not the uvula is engaged in the snare before pulling it through, if necessary, grasping the uvula with forceps or pulling it forward into view with the forefinger, this accident will never happen.

Hemorrhage.—Hemorrhage after the use of

posed thoroughly to view. The blood should be wiped away and a search made for bleeding vessels. In many cases it will be found that a vessel is pumping a fountain of blood, and sometimes a stream is carried away across the mouth. Such bleeding points should be grasped with a pair of artery forceps, the grasp being in the longitudinal direction of the muscle fibers. With the long curved threaded needle (made similar to a hernia needle, which I herewith show), the tissues at the end of the artery forceps are trans-fixed and the catgut threaded through. The upper half, and then the entire mass is tied securely and the forceps removed. Other vessels are tied if necessary in the same manner. If these precautions have been taken, and, in addition, the patient is compelled to remain for some hours in the hospital, hemorrhage will be avoided.

It seems to me to be poor surgery to remove tonsils, and make no effort to tie, or at least clamp, the bleeding vessels,—that is, deliberately to allow them to bleed. The surgeon does not follow this practice in operations upon other parts of the body where amputations are made, and why should he take the risk here? In my practice I find that we rarely ever find bleeding vessels in children, but frequently in adults. I have no doubt that severe hemorrhage would result in but few of these cases anyway, though I feel sure that many of them would lose more blood than is necessary except for this precaution, but I do not intend to take any chances.

Post-operative Hemorrhage.—In those cases where the operator has failed to tie the blood-vessels, a hemorrhage may continue after the operation and become so severe that something has to be done. Under those circumstances suturing of the pillars has been performed, but it is not good practice. The adhesions that may take place will naturally bind the pillars and materially incapacitate their muscular function. Styptics are of little value. The patient should be kept quiet in bed and should not be given strychnine or other remedies that would increase the blood-pressure. If necessary enteroclysis may be practiced, but bleeding should be controlled in the same manner,—namely, the clot that is present should be wiped away, the bleeding point discovered, clamped, and ligated in the same manner as described above. This can be done quite readily if the denuded area is wiped first with a weak solution of cocaine (about 2%).

Prevention of Infection of Mucous Membrane.—We have found that the delicate mucous membrane about the tonsils becomes readily denuded and hence more easily inflamed as a consequence of the use of fresh gauze, and for this reason we use only washed dampened gauze which we find much less harsh for sponging. Right after the removal of the tonsils we apply to the denuded area a solution of iodine and alcohol in equal parts.

Position of the Patient during the Tonsillecomy Operation.—In local anesthetic cases, novocaine injected hypodermically without adrenalin is very satisfactory, and, when operating under local anesthesia, the patient is in the upright position. If general anesthesia is used because of the danger of the entrance of blood into the larynx during the operation and because of the convenience and better view, I have for many years used a position with the face inverted, the

head being tipped directly back over the edge of the table. By referring to the pictures (exhibiting) it will be noted that a nurse sits upon a very low stool on the left side of the patient's head and supports the head, holding the jaw forward, thereby controlling the breathing, and keeping the head steady. The assistant with a tongue-depressor stands on the patient's right side well out of the way of the anesthetist, who is on the left side. The operation may then proceed by daylight, the light coming from a window back of the operator. Artificial light may be used.

Adenoid Operation.—The adenoids should be removed after the tonsils have been enucleated and the operator has insured against bleeding from the tonsil area. Then the patient's reflexes may be returning so that he will soon cough up any blood which may come from the adenoid curettement. Adenoids are best removed with a sharp instrument, one which will bring away the adenoid mass. The forefinger of the left hand should remain in the nasopharynx, pulling forward the soft palate during the whole procedure. With this finger the operator may determine the adjustment of his curette and whether or not all adenoid tissue is properly removed. Following the use of the sharp curette I like to use a dull side-scraping curette, removing whatever adenoid tissue may remain and cleaning out in the fossa of Rosenmueller, finally rubbing the surface with gauze. Immediately there will be found to be a gush of blood from the nose if the patient is in this position. This may be controlled by holding a tampon of gauze fastened to the end of a pair of curved artery forceps tightly against the walls in the nasopharynx until the hemorrhage is checked.

Posterior-inferior Turbinate Hypertrophy Accompanying Adenoids.—It not infrequently happens in the case of children who have been mouth-breathers that the posterior end of the inferior turbinates are hypertrophied or swollen, due to a lack of atmospheric pressure, and after the removal of adenoids the patient may not secure proper nasal breathing. Therefore at the time of the adenoid curettement the forefinger of the left hand, which is being held in the nasopharynx, is used to feel the posterior end of the inferior turbinates. If they balloon out and fill the space, this same dull-side curette may be turned up into the post-nasal orifices, and the posterior ends of the inferior turbinates may be cut away. The effect can be readily determined by feeling with the forefinger. This always re-

sults in a quick profuse gush of blood, which usually subsides within a minute.

Control of Adenoid Hemorrhage.—During the adenoid and tonsil operation I always have close at hand a Belocq's cannula with a post-nasal plug ready for use; and if bleeding persists I insert the plug, but this is very rarely required. This plug is removed, preferably in a very short time, as its retention for hours might possibly be followed by entrance of blood or infection into the middle ears by way of the Eustachian tubes.

NASAL DEFORMITIES AND DISEASES

Nearly all of my hearers do not practice rhinology or laryngology. Some of them at least may not understand why rhinologists so often perform operations within the nose, particularly submucous resections; and therefore a few remarks upon the subject of nasal diseases and operations may not be out of place.

The patient comes to the rhinologist complaining of what he calls "catarrh," which may mean any one or more of a variety of affections. He may complain of difficult nasal-breathing or absence of nasal-breathing, particularly at night, of post-nasal "dropping," of a tendency to catch cold, or of many symptoms which the rhinologist recognizes as being caused by some nasal disease, the result of a nasal deformity or sinus infection.

Function of the Turbinate Bodies.—The nose plays a very important part in the human economy. Its function is incidentally for smelling, but principally to aid in respiration. It is so constructed that the air that passes through it is sifted first through the hair in the vestibule, it then passes between the turbinate bodies into the naso-pharynx. The turbinate bodies are covered with ciliated epithelium, the movement of the cilia being forward. Particles of dust and dirt are thereby prevented from entering the throat or lungs, and are forced outward. The turbinate bodies may become quickly swollen and do so enlarge when cold air is inspired. Experiments have shown that the atmosphere that enters the nose is changed in temperature after passing through the nose to approximately the temperature of the blood, thus it may be raised or lowered as the table given by McDonald indicates:

At 20° F. the temperature was raised to 84° F.
At 35° F. the temperature was raised to 95° F.
At 45° F. the temperature was raised to 95° F.
At 55° F. the temperature was raised to 96° F.
At 113° F. the temperature was reduced to 92° F.

In addition to the control of the temperature, the nose furnishes much moisture to the air. The amount of moisture that is given off by the nose is dependent upon the amount of moisture in the air inspired and the temperature of the atmosphere, as the following table (from McDonald) shows:

	Temperature of Atmosphere	Temperature after passing through nose
A	64°	92°
B	64°	91°
A	68°	95°
B	68°	94°
A	70°	96°
A with erectile tissue collapsed under cocaine		
	68°	94°

It will thus be seen that in the normal nose the air enters the throat and lungs filtered, heated and moistened, and when this normal function is interfered with the throat becomes dry and irritated, and chronic inflammation and chronic pharyngitis, laryngitis, and bronchitis may result, while the blood does not become properly aerated, the general health suffering thereby. But something else takes place: The patient develops a tendency to take cold easily in the nose, which is often followed by infection extending down into the throat and bronchi, and a catarrhal or purulent discharge develops.

Nasal Deformities.—Fig. 1 represents schematically an ideal nose, and Fig. 2 represents a nose with a deflected septum and one with hypertrophied turbinates. It may readily be seen that the normal current of air in the case of a severe deformity is interfered with, and that when such a disturbance takes place so that the air is not permitted to come in contact with the mucous membrane of the turbinate bodies, proper evaporation will not occur and an excessive secretion will thereby result, giving rise to what the patient complains of as "catarrh." Furthermore, where there are cavities produced by deformities, resulting from contact between the septum and turbinate bodies, the flow of mucus is interfered with, it becomes infected, and thereby inflammation results, with the production of more secretion, which is usually purulent, thus producing the so-called catarrhal condition.

Deflections, especially in the upper portion of the nose, may interfere with the normal drainage from the ethmoidal, frontal, and antrum sinuses, and thus acute sinus infection may occur. Re-

peated acute attacks may give rise to chronic sinus inflammation. Then the patient explains that he takes cold easily, indeed, in some cases complains that he has colds most of the time, meaning that he has symptoms similar to those of a cold. All of these affections, and many others that are complications and sequelæ, may occur as a consequence of what at first was merely a septum deformity. In such cases the symptoms and the disease are usually relieved when the septum is straightened by the performance of a submucous resection of the septum.

Removal of Turbinates and Unskillful Nasal Surgery.—Bearing in mind the importance and the function of the turbinate bodies, it will be seen that it is a great mistake to remove a turbinate body just for the purpose of securing space. When that is done and too much space is secured a dry scabbing condition results afterwards. Too often, I regret to say, that procedure is resorted to rather than correcting the deformity by the proper septum operation, perhaps because it is very simple to remove a turbinate body, while the submucous resection of the septum is more difficult. I am further convinced that the septum operation is difficult from the fact that in some noses which I have observed where the septum operation has been done, a large perforation has developed, or it will be found that the septum operation has been confined only to the lower portion of the nose which is easiest to get at, and the more important deformities above have been left untouched. Rhinology and laryngology suffer because of these improper and imperfect operations, and it is a common experience, after advising a patient concerning operative work that should be done upon the nose, to have the patient state that he does not wish his nose operated upon because some friend has had an operation which has resulted in a disagreeable scabbing after the operation. This does not alter the fact that proper and careful surgery on the nose gives immense relief and materially benefits the health of many patients. A correct submucous resection of the septum destroys no mucous membrane, nor does it interfere with the important function of the turbinate body, thus a scabbing condition does not result. The loss of cartilaginous and bony deformities is of no consequence, provided the mucous membrane remains intact and provided a cartilaginous arch is left above and in front to prevent the possibility of a deformity.

Polyps.—Polyps formerly treated as an entity

are now known to be but a manifestation of a sinus disease, and they cease to occur only when the sinus disease has been successfully removed by operation.

Ethmoid Sinus Infections.—It was formerly thought that antrum infections were the most common. This is due to the fact that ethmoid infections were not readily diagnosed, and that often those infections which had been diagnosed as antrum infections were merely ethmoid infections, the pus from which poured into the antrum, which acts as a reservoir.

When chronic ethmoidal sinusitis exists it is necessary to remove the entire middle turbinate body and completely exenterate the ethmoid cells, which may be best and most readily done under local anesthesia. The locality is a dangerous one, and yet it is an exceedingly common operation in the hands of rhinologists in these days and is followed by fatal results in a very small percentage of cases.

Operators frequently make the mistake in not looking seriously enough upon nose and throat operations. They perform them in their offices and permit the patient to go about at will. From such practice hemorrhage or infection or other complications sometimes arise. Many of these operations may readily be performed in the office if it is thought desirable, but the patient should always be sent to the hospital, and be put to bed after the operation, where he may be properly treated and observed for at least one day and night.

Packing the Nose.—Packing the nose after any nose operation is undesirable, and need not be resorted to, except in very rare instances, if the patient is put to bed. It is an unsurgical procedure, as it dams up the secretion and thereby retards healing and may become dangerous. This is especially true after a sinus operation. Even in submucous resection of the septum, packing is not necessary and the little clamp may be inserted in the nose, which I herewith show. This is much more comfortable than is packing and may be removed the next day.

Acute Sinusitis and Treatment, Non-surgical.—Acute sinus diseases may usually be treated without surgical interference. That which most commonly causes pain and brings the patient to the doctor is an acute frontal sinusitis or an acute antrum sinusitis caused by retention of the pus. In these cases the tissues may be shrunken by using a weak solution of cocaine and, if necessary, adrenalin (adrenalin sometimes

is followed by a reaction of pain which makes its daily use undesirable), thereby opening up the orifices to these sinuses for the suction-pump. There are hand suction-pumps, which are helpful and may be used by the patient at home, but the hydraulic pump is preferable, as it will produce extremely strong suction. This treatment is usually followed by immediate relief, but, of course, has to be repeated as fast as the pus gathers. Cure gradually follows such repeated treatments. In these cases it will be usually found that the septum is deflected toward the side affected; and, after the attack has subsided, it should be corrected by a submucous resection to prevent recurrence and the development of chronic suppurative sinusitis.

ANTRUM OPERATION

The treatment of an antrum suppuration by an opening in the mouth is unsatisfactory, because there is a constant opportunity for re-infection from the mouth. The usual operation within the nose does not permit of a good view of the antrum and necessitates the removal of a portion of the inferior turbinate body. The operation that I am going to describe obviates these objections.

The direction of entrance into the antrum followed in this operation was first suggested, I believe, by Denckler, and also practiced by Jansen, but the proceeding described is modified in that the opening is situated back on the side under the inferior turbinate body, as will be seen, and in that the mucous membrane is utilized to lie on the floor of the antrum.

The operation may be done under general or local anesthesia; adrenalin is injected in either case. An incision is made just inside the vestibule of the nose along the line of union between the skin and the mucous membrane in front of the inferior turbinate body. This incision is carried down to the bone, coming against the sharp bony angle which proceeds anteriorly from the antrum. The mucous membrane under the turbinate body is now separated from the bone through this incision with a submucous elevator. It is separated way down and on to the floor and upward as far as the attachment of the inferior turbinate body, and this separation is carried all the way back. The soft tissues are then separated from the bone at the external wall of the antrum for a half or three-quarters of an inch. By the use of two retractors the soft tissues are

now pulled apart to expose the bony angle of the antrum. (Fig. 3.) This bony angle is now removed with a bone forceps for a distance of about one-half inch from the floor of the nose upwards. As soon as the antrum cavity is entered (Fig. 4) no more of the outside bony wall is removed, but thereafter all of the nasal bony wall of the antrum is removed, extending from the floor of the nose to the attachment of the inferior turbinate body and all the way back to the posterior extremity of the antrum cavity. Thus a piece of bone is removed about one-half inch wide all the way back. The interior of the antrum may be now thoroughly curetted if it is filled with granulation tissue, and its interior inspected directly from in front. When it is thoroughly cleaned out the mucous membrane lining of the nose which has been previously dissected is severed with a pair of scissors well up in under the inferior turbinate body and close to the attachment of the latter body. This mucous membrane which continues from the floor of the nose, is now laid down upon the floor of the antrum. We now have the floor of the nose continuous with the floor of the antrum. The antrum joining the inferior meatus, drainage is complete, irrigation is scarcely necessary, as pus cannot collect while the antrum cavity is well protected by the inferior turbinate body, whose function has not been interfered with, since none of it has been removed.

The relief of mild cartarrhal troubles may be effected by the restoration, as far as possible, of the nose to the normal and ideal construction.

In conclusion, may I emphasize the fact that a normally constructed nose containing no abnormal growths is a very great advantage from the standpoint of health to the patient possessing the same, in that he is not susceptible to colds or infections in the head, and a patient without diseased tonsils is similarly free from many infections suffered by those carrying these hotbeds of infection about in their throat. It therefore becomes the duty of the rhinologist and laryngologist when seeing a patient suffering from these sinus diseases and diseased tonsils to relieve them by operation, if possible, but more especially does it become his opportunity to prevent these more serious diseases by reconstructing malformed noses and approaching so far as possible the normal construction, bearing in mind the importance of the turbinate bodies and disturbing them as little as possible.

MINERAL SPRINGS SANATORIUM AND THE MEDICAL PROFESSION OF GOODHUE COUNTY*

By ROBINSON BOSWORTH, M. D.

Executive Secretary of the Advisory Commission, Minnesota Sanatorium for Consumptives

ST. PAUL

The first year's work of your County Sanatorium at Cannon Falls, was completed on November 2, last. We cannot neglect this opportunity of presenting to the medical fraternity certain observations and conclusions based upon the results shown in the first annual report, recently compiled.

The history of this institution shows that it was established mainly through and by means of an energetic personal educational campaign, led and carried to a successful termination by members of this Society. It will therefore follow that an unusual degree of interest will be felt by this Society in the degree of success attained by this institution.

In presenting this analysis of conditions bearing on the sanatorium and the medical profession, we wish to ask ourselves certain questions and develop, in a frank and fair-minded manner, the correct answers to these questions without stepping on toes with undue vigor. Feeling that, with this apology, we may proceed fearlessly, we request a lively discussion on the following points:

Has your institution completed a successful first year?

Will ensuing years show equal or greater success?

Has the institution been of value to the community?

Could it be made of greater value, and, if so, how?

The first question, taking them up in order, is, Has the institution completed a successful first year? During the twelve months, 28 patients were admitted, and cared for over a period of thirty days or longer. Ten have been in the institution less than thirty days. These ten, of course, cannot be considered as being benefited from a medical point of view, and therefore are classified as "dead" or "unimproved," as the case deserves. The average length of treatment for all cases was three and one-half months. Of those 28 remaining thirty days or longer, none were of the early or incipient stage. In fact, only one early patient passed the doors of this institution, staying there three weeks and being

discharged because of infraction of the rules governing the deportment of patients. This patient did not come from Goodhue County. The rest of the cases were "advanced" and "far advanced." They were instructed as to the proper habits to prevent spreading the infection to others, and were improved in health with the exception of the seventeen who died. These received kind attention and, in all probability, better care than could have been afforded in their homes, but the "success" attained in their care lies in the isolation of these spreaders of infection from the community at large and the children in particular.

The average length of residence for those cases who died in the institution was eighteen weeks. Considering the teaching given the patients discharged living and the isolation of the dying patients, we are warranted and compelled to credit the first year's record as being a success to a limited degree.

Will ensuing years show equal or greater success? The history of all such institutions makes us of the opinion that you may expect that, not only will increased numbers be admitted in the future, but earlier cases will apply, and the average length of treatment will be very greatly extended. There are several reasons for this: First, and most important, is the results of educational influence on the community. Your people have been, in the main, in the habit of remaining home when they were ill from tuberculosis. It is always a difficult and slow work to educate the public to the benefits of institutional care from a financial point of view, as well as from the point of view of superior medical results obtainable when institutional accommodations are first offered the public. This is true in the case of a general or maternity hospital, as well as in a tuberculosis sanatorium. As years go by and the results of the institution are made known, it is the common history to note an increased demand upon the part of the community for increased and better institutional accommodations. This is distinctly shown at the present time by the fact that a greater number are now at the Sanatorium than at any period during the first year's conduct of the institution.

*Read before the Goodhue County Medical Society, January, 1916.

This educational influence is not restricted to the lay public, but is seen in the constantly increased interest and coöperation afforded by the medical profession. Earlier cases will apply for the reason that it does not require long to educate the public that modern scientific sanatorium observation and advice is of distinct value to the early case, and of less value as the disease advances, at which time, however, the value to the community in providing sanatorium care is greater. "He who hesitates is lost," is true here if anywhere. Patients will remain for longer periods of treatment for the reason that at first the common advice of the family physician to "go to the Sanatorium for two or three months and learn how to treat yourself," will go out of date. We know of no worse advice to give a prospective sanatorium patient than to anticipate a result devoutly to be wished, prior to any demonstration on the part of the patient of his individual ability to handle an infection which is absolutely impossible to quickly gauge, as is the degree of immunity or power of overcoming the infection. Such advice only means that at the end of the period for which he came, he is prepared, because of his two or three months' anticipation, to return to his home irrespective of the advice from the sanatorium physician, who alone is able to properly advise the patient, because of his opportunity for continued observation of the case. It is very uncommon to question a new patient who has been instructed to remain until the sanatorium doctor advises discharge. We believe the point is entirely obvious.

Has the institution been of value to the community? This has been partly answered in the foregoing. Through its teaching of those correct habits to the discharged case, it has been of considerable value already, provided the public is ready to do its part, concerning which point we shall have something to say later. By its kindly care and isolation of the advanced and dying case, it has been of value, which cannot be measured or properly appreciated at this time. The fact that a wave of knowledge has been started throughout the country that will develop into something better in the future, is certainly of great value now. That the public knows little of the institution, its exact purposes and aims, is unfortunately true, but this in time can be corrected.

Can the institution be made of greater value to the community, and, if so, how? Here is a great opportunity. To succeed in the fullest

many things must be done. Early cases must be sent. They are here in the county. Some of them are known, and some attempt is often made to arrest progress of the disease while the patients remain at home, and return them to working capacity. Upon the whole, the attempt is, and has been, a failure, as shown by the unimproved condition of the tuberculosis problems year after year. If there had been any distinct measure of success from the home treatment of tuberculosis, would not some result manifest itself by the decline of annual deaths from this disease and the development of new cases? It is true that all cases of tuberculosis cannot be, and never will be, provided for in institutions. The sole reason that it is impossible is because of the inability of any community to provide ample accommodations for the great number, and be in any degree warranted in their indefinite detention. But this community so far has not availed itself to the fullest of the accommodations already provided. Just what good reason may exist for any impression which may still remain among the medical fraternity that early or incipient cases can be properly and efficiently advised and treated at home by the general medical man, with results at all comparable to those obtained by modern sanatorium treatment, is, to say the least, difficult to discover, and particularly so when it is realized that those who devote their entire lives and energies to this one specialty resort to home treatment only as a last resort, as it were.

Recalling the fact that no early case was referred to the Sanatorium by the physicians of this county, and proceeding further upon the supposition that there does exist, in a measure at least, difficulty in the diagnosis of early tuberculosis, is it inconsiderate or in the least presumptuous to expect or invite, or even urge, the medical profession to send those early cases which are discovered to the Sanatorium, to that extent, at least, that the capacity of the institution is able to receive them? We are of the opinion that this would be one of the means by which the institution could be made of greater value to the community.

Another very valuable means, and in our opinion even more valuable, is the further development, and the support by the public and by the medical profession, of a children's department. There is no room for question as to the correctness of the statement that the measure of attention paid to exposed and infected children will, to a very great extent, mark the success of our

efforts to limit or decrease the amount of tuberculosis in years to come. It is conceded at this time that the individual, in the vast majority of instances, receives the infection from tubercle bacilli while he is yet a child, to harbor this latent infection over many years, to develop or not to develop active disease, according as the individual is able to retain good health in spite of temporary periods of lowered resistance, induced by wrong living, active infection from other organisms, injuries, child-birth, overwork, undernourishment, etc. That these and other causes are only the means whereby the tubercle bacillus is brought to life, as it were, is conceded. This being the case, would it not be appropriate for the child to receive some degree of special attention from us? It is known that placing these exposed and infected children in preventoria and sanatoria is followed by amazing results. There is also good ground for the belief that infected children so energetically built up in health and vigor thereby attain a certain degree of immunity against subsequent infections by tubercle bacilli. Thus, should the child receive proper attention while yet a child an immunity can be produced against the later development of tuberculosis which would not be possible to attain otherwise. It is with this thought in mind that we urge the closer coöperation of the medical men with the work being so ably and successfully developed by the visiting nurse you have all met and the dispensary already established here. In this attempt of the nurse and of the sanatorium physician to reach, through the agency of the free dispensary, those individuals who have been exposed, we see only one of the many valuable means whereby the Sanatorium can be of still greater value to the community in the future. It is not the aim or the endeavor of the nurse or the dispensary to handle or come in active contact with individuals who are able to obtain proper advice and assistance from the medical profession. When it is realized that a very large percentage of the tuberculous, even those in active stages, are not under the supervision or treatment of any medical man in this community, you can readily appreciate the wide field open to these agencies. If the visiting nurse can assist any physician in the improvement of conditions in the home of any consumptive,—and she certainly can in many instances,—it is an assistance which can be obtained for the mere asking. If the physician of the Sanatorium can be of any possible aid in the diagnosis or

in the direction of any patient in your hands, he is ready and anxious to respond to your call, as he has been in the many instances in the past. This help furnishes a means of increasing the value of the Sanatorium, and those connected with it, to the community.

There is one more means for increasing its value, indirectly perhaps, but still of great importance, which we will mention at this time. Many patients can be sent to the Sanatorium, who, when sufficiently restored to health, may, with proper habits developed, return to the community with perfect safety to the adult population at least, even though they cough, expectorate, and have tubercle bacilli in the sputum. We have referred to this before, upon different occasions, and recently our attention has been called to similar statements by others, more notably, Dr. Edward R. Baldwin, at present time director of the Saranac Laboratory and President of the National Association for the Study and Prevention of Tuberculosis. When such a remark is made in connection with the safety of the public from a consumptive, it is meant that the public is protected from infection by means of the habits learned at a sanatorium, and therefore the public should treat him as a safe individual to have in the community, instead of the menace which he undoubtedly was to at least the children before he was taught protective habits. Why request anyone to go to an institution for the purpose in part, at least, of learning proper habits for the protection of the public when the public is unwilling to concede the safety of a trained individual upon his return to the community? It is an exceedingly unusual occurrence for an adult to develop tuberculosis from infection received after reaching adult life. Why, then, should not the individual trained to protect others, be received and treated, by, at least, those of the community who are already almost completely protected from any consumptive because of their adult station in life, in such a manner as to support and encourage him in his habits of protection, which are of great value to the children, instead of the almost complete social ostracism which now prevails?

It will be the good fortune for Mineral Springs Sanatorium to assist many consumptives in regaining perfect health, but for many others it will be impossible more than to partially set them on their way to recover, and to continue in the home the good work begun at the Sanatorium.

REPORT OF A CASE OF PERNICIOUS VOMITING IN PREGNANCY*

BY W. J. COCHRANE, M. D.

LAKE CITY, MINNESOTA

When I was asked by your Secretary, a short time ago, to prepare a paper for this meeting, I thought that I could do no better than to report a case of pernicious vomiting in pregnancy, which occurred in my practice recently. The case was one of especial interest to me, for, in spite of all the treatment given, the woman died. I do not expect to be able to offer much that is new or original in the way of treatment of this interesting condition.

Before giving a report of the case, I thought it would be well to give a short synopsis of the condition in general. It is customary to speak of vomiting in pregnancy as *pernicious* when it is so serious and persistent as to jeopardize the woman's life, and when it does not yield to the ordinary remedial agents. Not all forms of persistent vomiting are pernicious, and it is important to distinguish between the real pernicious vomiting and that which is an exaggeration of the normal nausea of the accompaniment of pregnancy. Kelly says "when the patient vomits persistently at intervals all day and all night, vomiting being associated with ejections of bile and blood, when the condition becomes so aggravated that no food whatever is retained and the patient's strength is so exhausted that she is confined to bed for the greater part of the time, and when this condition of things has lasted for from ten days to a fortnight, it can always be considered pernicious."

Causes.—The number of theories advanced as to the causes of vomiting in pregnancy, indicates our imperfect knowledge of the subject.

Among the many causes given, the following may be mentioned:

The essential and probably the most important cause is the reflex irritability from the growing uterus, which may or may not be complicated by malposition of the uterus, as excessive ante-flexion or retroflexion, or by a pathological condition of the uterus or its adnexa, as, for instance, endometritis, salpingitis, or ovaritis. A pathological condition of the digestive tract, as gastritis or gastric ulcer, may be a causative factor. Last, but not least, kidney impairment must not be overlooked. Toxemia best explains the

cause of a large number of cases of pernicious vomiting of pregnancy, and the clinical picture, as well as the pathology, shows there are marked changes in the liver, kidneys, stomach, and blood.

Diagnosis.—First, we should be certain that the woman is actually pregnant. Pernicious vomiting may begin almost as soon as pregnancy itself. It must also be certain that the vomiting is not the result of organic disease. A careful examination of the pelvic contents should be made to discover any disease or abnormal position of any of the organs. A careful examination of the urine should be made. Finally, all causes, other than those of gestation, should be sought for.

Prognosis.—The prognosis in pernicious vomiting of pregnancy is always grave. Jourlin reports 121 cases with 41 deaths. Of 97 cases without treatment, 28 proved fatal, while of 36 treated by induced abortion, only 9 died.

Treatment.—The treatment may be considered under three heads:

First, dietetic. The food must be light, and when the stomach will not retain the smallest quantity of food, rectal feeding is the only means of keeping the patient alive. Nutrient enemata are administered in concentrated form, four to six ounces every six hours. It is well to wash out the bowels once daily, while rectal alimentation is being used. Lavage of the stomach should be tried, and is sometimes beneficial.

Second, medicinal. Needless to say a long list of drugs have been recommended for this condition. There exists absolutely no specific. A drug that apparently helps one woman, may prove an absolute failure with another. Among the drugs recommended, we may mention oxalate of cerium in five-grain doses. Cocaine, 4 per cent solution, 10 to 15 drops every four hours. Ingluvin, 10 to 15 grains every four hours. Bromide and chloral administered by rectum where the patient is very restless, and even hypodermics of morphine may be used.

Third, surgical. When all other means have been tried without benefit, surgical measures are indicated and should not be too long delayed. All uterine displacements should be corrected. The application of silver nitrate or tincture of

*Read before the Goodhue County Medical Society, January 4, 1917.

iodine to the cervix is sometimes useful. Cervical tampons may be applied.

When all these measures have been given a trial and failed to relieve, and the woman's condition becomes more critical, evacuation of the uterus must be considered. While the induction of abortion should be employed only as a last resort, it should not be delayed too long. It may be unnecessary to state that as the matter of abortion involves great moral and legal responsibility, the physician should always have the support of competent medical counsel before the evacuation of the uterus is done. The best method of evacuating the uterus up to the third month, is to dilate and curet. The cervix is rapidly dilated to three-fourths of an inch, and the ovum is curetted away with a sharp curet, care being taken that all placental tissue is removed. No packing is required. The whole procedure should not require over fifteen minutes.

REPORT OF A CASE

On October 20, 1916, I was called to see Mrs. C., aged 30, married one month. She was suffering from severe headache, backache, and pain in her stomach, and was belching a great deal of gas, vomiting frequently, especially in the morning, was able to retain very little nourishment, and her temperature and pulse were normal. She had missed her menstrual period on October 20. Up to that time her menstruation had been regular and normal. She had always enjoyed the best of health and had never had a medical attendant except once before, and that to reduce a fractured arm. The patient was well developed, well nourished, and strong. Examination of the pelvic organs revealed nothing abnormal. Examination of the urine was negative.

Since she had missed her menstrual period and nothing in the abdominal and vaginal examination showed any cause other than gestation for the vomiting, a diagnosis of vomiting of pregnancy was made. The usual drugs for this condition were employed,—ingluvin and calomel in divided doses, and milk of bismuth, and corpus luteum in 1 c.c. dose was hypodermatically administered once a day. This treatment was tried three days without any benefit. At the

end of this time a trained nurse was secured. The patient was put to bed, and given a nutrient enema, 4 to 6 oz. every six hours. All food was withheld from the stomach. Under this treatment vomiting ceased after a few days, but there was slight nausea mornings. The patient was able to take a fair amount of light nourishment, the nurse was discharged, and the patient was up and about the house.

On November 15 all previous symptoms returned, and the patient was taken to a hospital. Her temperature at this time was normal, and the pulse 88. She vomited frequently, and even the sight or thought of food caused nausea. Rectal feeding was again instituted together with enemas of saline solution. At times she would retain a small amount of liquid food by stomach; at other times even water was immediately ejected. The administration of different drugs was followed with no benefit. Adrenalin, 1-1,000 solution, in 5-drop doses, was given hypodermatically every four hours without effect. This line of treatment was continued until November 28, when the condition of the patient indicated she was becoming toxic. She became very nervous, irritable, and lost markedly in weight. At this time medical counsel was called in, and induction of abortion advised, but consent was refused. The condition gradually became more grave until December 9, at which time her pulse was 130 to 140; temperature 102°; and the patient restless and complaining of shortness of breath at times. The sclera of the eyes and skin showed a yellowish tint, evidently the effect of toxemia. The patient had watery diarrhea, and the vomitus was streaked with blood. The teeth and tongue covered with sordes and there was petechial hemorrhage from the mucous membrane of the mouth and throat. The urine at this time contained no albumin, and the amount passed in the previous twenty-four hours was 32 oz. On this date consent was obtained from the patient and her relatives to induce abortion. Under light ether anesthesia the cervix was rapidly dilated and the contents of the uterus removed with the curet. The patient got along fairly well until 9 p. m. on the same date, when she went into collapse. She was given a quart of saline by hypodermoclysis, digitalin, gr. 1-50, hypodermatically, and other supportive treatment. She gradually revived, and got along fairly well. The vomiting ceased. She took milk and buttermilk by mouth. The pulse still remained about 140, and the temperature 102°. She was delirious at times, and at the end of twenty-four hours, while resting quietly, she suddenly expired, death being due, no doubt, to exhaustion and to her toxic condition.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

APRIL 15, 1917

NEUROLOGY OF THE WAR

The October, 1916, issue of the *Review of Neurology and Psychiatry*, published in Edinburgh, Scotland, is given up to traumatism of the nervous system in the war, as recorded by the British neurologists and surgeons. To be fully comprehended, the entire issue should be abstracted, but, as the journal is made up mainly of abstracts, it is almost impossible to go into detail. To give even a passing comment one can simply give the headlines of the various articles and abstracts. For instance, the first article is by Dr. Aubrey Mussen, who is the assistant in psychiatry in Johns Hopkins Hospital and neuropathologist of the Medical Research Committee of London. He gives a detailed account of histological changes in the traumatic degenerations of the spinal cord, following bullet wounds of the cord-substance or shock to the vertebral column. That in itself would suggest the various changes which occur from either injury to the cord or to the bones themselves. That degenerations occur throughout the spinal cord in its various segments is quite evident from direct wounds; and deaths also occur from injury to the spine itself in which fragments of the vertebrae produce open wounds, eventually septicemias, bronchial

pneumonias, and death, but without injury to the cord itself. Evidently surgery in these cases is not very satisfactory, as the shock, infection, and later involvement of the central nervous system are often followed by death. It is impossible to conceive that a bullet wound of this magnitude in which the cord or spine is involved, could result otherwise than in chronic deformity or death. In some cases a vibration effect on the nerve fiber is probable, but not infrequently is accompanied by hemorrhagic infiltration.

To the student of nervous pathology these cases are extremely interesting, showing very extensive changes from either severe or apparently trivial wounds.

Gunshot wounds of the head have been extremely frequent, and it has been found that surgical interference, other than that necessary for the drainage and healing of the wound, increases appreciably the risk of later complications, or cannot modify, except in a harmful direction, the course of these cases from a functional standpoint. Attempting to remove sources of infection by larger surgical interference is inadvisable. Naturally, all manner of focal injuries to the brain have been found, and, in some instances where the skull has been trephined and extradural hemorrhages removed, the patient has recovered, particularly in those cases where monoplegia or epilepsy resulted. In visual disturbances due to injuries, it has been found that the cortical center of vision is confined to the calcarine fissure and adjacent cortex, again proving the theory, which has been long accepted as true, that the primary center of vision is in the occipital lobe.

Abscesses of the brain are as common as one would expect aphasia with right hemiplegia, both occurring from direct injuries or injuries to the vascular supply of various centers. Cerebral embolisms due to injuries of the carotid arteries are not infrequent, and the fact is brought out that a limited injury is considered the most serious source of danger. The injuries to the spine from gunshot wounds have been classified into those in which the functions of the spinal cord are not interfered with, and those in which there is such interference with or without obvious injury to the vertebral column. In most cases this damage is immediate. They are further divided into injuries in which the missile passes through the spinal canal, wholly or partly dividing the cord, the fractured portion of bone being driven in against the cord, which causes compression,

contusion, laceration, or division. These are found to be the most frequent causes of cord injury. Third, are the concussions of the spinal cord in which functional changes are due to jarring and emotional effects of the blow, and the cord may show no external signs of injury, either by inspection or palpation.

X-rays have not proven very reliable in these cases, as they sometimes do not reveal any injury to the bone, even though the injury be present. Operations in these cases are not very successful, owing to various conditions which have been stated above.

Injuries to nerve trunks have occurred in a large series of cases. Lesions of the radial nerve show principally motor paralysis, while lesions of the ulnar are characterized by pain, and those of the median nerve by painful, vasomotor, and trophic disturbances. In these cases pain is an exasperating symptom, aggravated by pressure and heat and extending through the course of the nerve. This applies particularly to the median nerve and not to the radial branch. It is in these cases that recoveries may be expected if the nerve trunk is not too severely injured and exercises of the limb later by mechanical or manual measures have produced good after-results. Fortunately, where the injury to the nerves has been incomplete from bullet wounds, the surgeon has an opportunity to suture or free the nerve from adjacent injured substances. Recovery of nerve injuries is naturally slow, as in many instances a regeneration of the nerve fiber takes place after many months. Injury to the musculospiral nerve, if it involves the posterior part of the musculocutaneous, produces some disorder of sensation. These injuries can be very readily traced and very accurately defined. One case is recorded where a form of Erb-Duchenne paralysis was due to a bullet wound of the fifth cervical nerve, and the clinical recovery occurred in about seven months.

The most interesting of these gunshot wounds are the various neuroses, or shell-shock, manifested by hysteria, neurasthenia, and lack of energy. In these cases a vicious circle of weakness and worry is quite common, and malingering is not infrequent. All of these are simply disordered emotions, and are as mixed as we find them in the personal-injury cases in our own courts. These conditions might be readily appreciated if we knew from close contact of the constant, violent, and persistent shell-concussions which are passing over the armies at all times.

How a soldier is able to escape from some of these psychoneuroses is a marvel. Morbid fright, pent-up emotions, stored-up fears, are frequently seen, and are sometimes accompanied by contractures and anesthetics. Sometimes these cases are treated by suggestion with good result. It is not strange that confusion, delirium, and amnesia are of mental origin, and that astasia-abasia, tremor, paralysis, and contractures are of nervous origin. Stupor and deaf-mutism of the hysterical type are found, and these cases, also, respond properly to appropriate psychotherapy.

One might go on with these various nervous and mental disorders, together with the injuries to the meninges, and illustrate the various difficulties that the surgeon and neurologist have to deal with on the battlefield. Some very peculiar cases have been observed which differ widely from our preconceived ideas of cause and effect.

It has been suggested by some writers that criminals and the feeble-minded classes should be sent to the front. This theory might work out all right as far as the criminals are concerned, but the effect of the war upon the feeble-minded is quite a different thing. The latter become ungovernable, and not infrequently attack their own officers or comrades, and their ideas of discipline are annihilated, and they make all sorts of mistakes in carrying out orders. Consequently these people should be relegated to the quiet zones far away from active warfare.

MEDICAL RECRUITS NEEDED FOR IMMEDIATE SERVICE

The Government, through the proper officers, has already sent out a demand for medical officers, not only to take charge of base hospitals, but to go into active service; and it has been found a rather difficult matter to get a sufficient number of volunteers. Surely, there are enough medical men in the United States, young men with experience, who ought to volunteer their services. The Base Hospital which is to be established by the University has already a large staff of surgeons, medical men, neurologists, nurses, and orderlies; and when the time comes to put this hospital in operation it will be found fully equipped and ready for action anywhere within or without the state, or within or without the United States. If Minnesota can do as much as it has already done in the enlistment of medical officers, surely other states can do equally

well or better, particularly the larger populated states. Even if their services are not required for one or two years at the front, these men can do much other work that may come under their supervision.

Perhaps America will need the same sort of "jolt" that England got in the early months of the war; but to avoid that America ought to profit by the mistakes of England.

Unfortunately, there is going to be a great deal of strife and a bitter feeling on account of the number of aliens from all countries that are here, and the United States Attorney-General has issued an order, or at least made a very striking suggestion to the alien, to obey the law and "keep your mouth shut." This advice is equally applicable to Americans; and, if our country is going to be in line with the best, all Americans should conduct themselves fairly, reasonably, and without that bitter feeling which is so dominant in Europe. We believe that America can do this if it will keep in mind that the foreign element is a very large part of the melting-pot of America, and that they need our assistance and example. In spite of our efforts to carry on a non-hostile internal preparation for war, there will be fanatics who will create disorder in various parts of the country, but the medical men can set an example which will be helpful and widespread. Probably the same experience will occur here that has occurred abroad, and medical schools will suffer from the enlistment of teachers and undergraduates, and this is a matter of serious moment; but it will not hurt the schools in the end, nor will it retard graduates from accomplishing their purpose later

MEDICAL LEGISLATION IN NORTH AND SOUTH DAKOTA

The physicians of South Dakota killed, for the second time, a chiropractic bill, and obtained for the poor of the state free antitoxin.

The physicians of North Dakota, as a member of its Senate writes us, did little beyond preventing action by the "non-partisans" so that they could not "put over on our people" something that it "would take a generation to eradicate." An excellent but moderate public-health bill was looked upon "as a viperous introduction to poison the people," and it was killed; and so the State remains near the bottom of the States that discourage the preservation of public health.

A bill to compel butchers and venders of meat

to be examined once a year to determine whether they are free from contagious diseases, was passed, as was also a bill requiring the inspection of soda fountains.

At least one admirable bill is to the credit of North Dakota. County superintendents of schools are now permitted to employ school nurses, and they are given sufficient power to make their work effective.

A CORRECTION.

In an editorial of March fifteenth, the editor of THE JOURNAL-LANCET made the statement that the Graduate School of Medicine of the University of Minnesota, has consisted so far of but one student. This he wishes to retract. The retraction is due to the fact that Dr. R. O. Beard, the Secretary of the Faculty, has shown that the School has twenty-seven graduate students, in addition to the teaching fellows and graduate scholars. These men represent sixteen different institutions from which they came to Minnesota. Dr. Beard has given, very concisely, the character of the fellows, teaching fellows, and graduate scholars; and his statement also carries with it the information that seven graduate students in medicine have received the M. A. or M. S. degree in a period of three years.

The Editor of THE JOURNAL-LANCET has no wish to confuse the situation, but he assumed that his information as to the one man already graduated was authentic.

MISCELLANY

THE 1917 MEETING OF THE A. M. A.

The meeting of the A. M. A. is held this year in New York City on June 4 to 8; and there are at least three good reasons why there should, and will, be a large delegation from the Northwest: first, the coming together of many distinguished men at a time when some of the gravest problems with which men have to deal are to be considered, and some of them solved; second, New York City is a place of great human interest, and everybody wants to see something of it; and third, but not least, the president of the association, is a Northwestern man, Dr. Charles H. Mayo.

The trip is worth while from every point of view.

THE JOURNAL-LANCET, as has long been its custom and with the approval of the president of the Minnesota State Association, has made arrangements with the railroads to give special attention to the Northwestern physicians and their wives that they may travel together and thus renew old and make new acquaint-

ances, thus adding very greatly to the value and interest of the trip.

The plan is to meet in the Twin Cities, and from this point to use the Milwaukee line, which will furnish the finest accommodations obtainable. The eastern connections will be announced later.

PROGRAM OF THE ANNUAL MEETING OF THE NORTH DAKOTA STATE MEDICAL ASSO- CIATION, MAY 9 AND 10, AT NEW ROCKFORD

President's Address. By Dr. V. J. La Rose.

Oration in Surgery. By Dr. J. P. Aylen, Fargo.

Important Conditions Overlooked in Diagnosis in Infancy and Childhood. By Dr. J. P. Sedgwick, Minneapolis, Minn.

Acute Empyema of the Gall-Bladder. By Dr. W. A. Dennis, St. Paul, Minn.

Laboratory Demonstration Exhibit. By Dr. J. W. Cox, University of North Dakota.

Oration in Medicine. By Dr. F. R. Smyth, Bismarck.

Mechanical Treatment of Infantile Paralysis. By Dr. A. J. Gillette, St. Paul, Minn.

Protein Milk (Eiweissmilch). By Dr. C. A. Scherer, Fargo.

Scientific Babies. By Dr. H. B. Wentz, Verona.

The Transverse Incision. By Dr. E. P. Quain, Bismarck.

Tuberculous Peritonitis. By Dr. M. P. Graham, Carrington.

Carcinoma of the Colon, with a Report of Two Cases. By Dr. G. M. Williamson, Grand Forks.

The Comedy of Medical and Surgical Nomenclature. By Dr. F. W. McManus, Williston.

Tonsillar Infections and Their Diagnosis. By Dr. S. Oftedal, Fargo.

Papers (subjects not announced). By Drs. G. J. McIntosh, Devils Lake, and Dr. A. D. McCannel, Minot.

REPORTS OF SOCIETIES

THE MINNESOTA ACADEMY OF MEDICINE

A regular meeting of the Academy was held on March 14, with President Colvin in the chair.

Dr. Frank C. Todd, a former president, presented the Academy, through President Colvin, a handsome silver gavel, containing the names of all former presidents, with ample space for many more names.

An amendment to the constitution, increasing the membership from sixty to eighty, thus doubling the limit set when the Academy was organized, was proposed.

PRESENTATION OF SPECIMENS AND REPORTS OF CASES

Dr. Hammes showed a brain with its tumor and presented a history of the case. Just what the tumor involved had not been definitely decided, but it was thought in all probability to be sarcomatous.

Dr. O'Brien showed two amputated breasts, both being neoplasms of the adenofibrocarcinomatous variety.

Dr. Law reported two or three cases of transfusion in new-born infants suffering from hemorrhages.

Dr. Ulrich recited a case of carcinoma of the umbilicus, and showed lantern-slide illustrations.

Dr. Farr discussed at some length the operation for harelip and cleft-palate, showing numerous photographs taken both before and after operation. He also mentioned a case of appendectomy that he recently performed on a young child.

Dr. H. B. Sweetser mentioned a very mysterious case that came under his notice at the City Hospital, Minneapolis. A woman was brought in who upon examination showed very extensive and severe injury of the pelvic organs. Several feet of intestine protruded from the vagina. She was operated on immediately.

Dr. Adair reported several somewhat similar cases of instrumental rupture and perforation of the uterus. In two instances the bowel was perforated. One patient died, and the other lived. In a third case, a midwife, in attendance upon labor, delivered with forceps. For some reason or other, presumably to remove an adherent placenta, she introduced her hand into the uterus and pulled something away. What she brought through the vagina proved to be the omentum. Opening the abdomen at the hospital later, the placenta was found free in the cavity. There had been considerable hemorrhage and some peritonitis. The woman died of pneumonia three days later.

Dr. Dennis exhibited a fresh specimen of acute empyema of the gall-bladder. The intact mass was about four inches long and one and one-half inches thick, and resembled, as one member expressed it, a link of fresh Frankfurter.

Dr. Todd called attention to some peculiar cases of conjunctivitis that seemed somewhat epidemic in character.

Dr. Leavitt showed photographs enlarged and water-colored of a five months' fetus born at the City Hospital. The mother, a colored multipara, was admitted with the diagnosis of placenta previa. The conditions not demanding interference with the probability that it was a miscarriage, the patient was allowed to deliver herself spontaneously. The peculiarity of the conception, as it appeared upon its birth, was that the fetus, amnion, and placenta were intact and adherent to one another, the whole object being an ovoid mass. With some difficulty the placenta was separated from the child. Two photographs were shown, one before and the other after the mass had been separated into its component parts.

Following the clinical part of the program the paper of the evening was read by Dr. C. M. Carlaw the subject being "Sacropubic Hernia." The reading of his paper was followed by numerous lantern-slide illustrations. Drs. Benjamin, G. Schwyzer, and H. B. Sweetser entered into its discussion.

CASE-REPORTS

Dr. E. M. Hammes presented the following case:

Case A.—Seen in consultation with Dr. Dedolph,

December 1, 1916: A boy, three and one-half years old, with a negative personal history; birth was at full term and normal, and he developed normally.

Family history, negative. Personal history, negative except a tonsillectomy in the early part of October, 1916.

About five o'clock in the evening of November 5, 1916, while carrying the patient, the father stumbled, and the child struck the occipital portion of his head on a piece of frozen ground. The child did not become unconscious or cry, and seemed perfectly right the rest of the evening and during the night; however, the next morning the mother noticed that the child had some difficulty in walking, showing a tendency to stumble. This condition rapidly grew worse, and, by the first of December, he was unable to walk without help. He had some diffuse headaches, vomited once since the accident, and had occasional involuntaries. Apparently, his mental condition was normal.

The physical examination was negative. The neurological examination showed the following: pupils, equal but markedly dilated; respond to light and accommodation; there was a markedly bilateral choked disc with hemorrhage in the left fundus. There were marked Rombergism and slight ataxia of both upper extremities, associated with a general coarse tremor; there was bilateral nystagmus. The deep and superficial reflexes were normal throughout; there was no Babinski nor ankle-clonus; the urine was normal; a Wassermann was not taken, nor was the spinal fluid examined, because it did not seem safe to do a lumbar puncture.

A diagnosis was made of a cerebellar lesion, either hemorrhage due to the accident or a sarcoma.

I again saw the boy a week later, when his condition had grown decidedly worse. His eyes were slightly bulging; there was a slight separation of the sutures of the skull, and there was every evidence of a rapidly increasing internal hydrocephalus. The patient died about four weeks later. The post-mortem examination showed the following: the skull bones were markedly thin throughout; there were a slight separation of the sutures of the skull, and marked internal hydrocephalus. On opening the left lobe of the cerebellum, we found a tumor about the size of a walnut, definitely encapsulated, with the central area degenerated, involving the entire medullary portion of the left lobe. There were no signs of recent hemorrhage anywhere. On gross examination, the tumor appears to be sarcoma; however, we have not finished the staining of the specimen as yet.

The interesting part of the case is the fact that, undoubtedly, a large cerebellar tumor has existed for months without giving any clinical evidence whatsoever of its presence, and the fall is simply coincidental to the symptoms.

Dr. H. J. O'Brien presented the following case:

I submit these specimens of adenocarcinoma and fibro-adenoma, not because of their great rarity, but because of the somewhat unusual history and clinical symptoms.

Miss R. came to the office for examination on the 7th of March. She is an unusually intelligent woman, unmarried, aged 52, and for many years a public-school teacher. She told me that two months ago she noticed a swelling in the right axilla, for which she consulted a doctor in the town in which she lived. He said it was

an abscess, and gave her some ointment for external application. The growth did not diminish, nor materially increase, in size, but she noticed that both breasts, which had been rather small, began to enlarge. Six weeks after consulting the first physician, she called in another doctor, who made a diagnosis of an axillary tumor, and said it should be removed at once, but gave no opinion as to the condition of the breasts.

Upon examination I found a rather spare woman in moderate flesh and very little fat. Physical examination of the thorax and abdomen, negative; x-ray examination of chest, negative; blood examination, negative; urinalysis, negative; temperature, 99.5°; pulse, 85.

In the right axilla several nodules could be easily palpated. Both the right and left breasts were enlarged, and the nipples slightly retracted. Upon palpation two or three tumors, giving the impression of lobules, could be easily made out. The patient was sent to the hospital; and on March 13 the nodules in the right axilla were excised, and a frozen section proved them to be adenocarcinoma with some cysts; in the left breast there was a fibro-adenoma with some cysts.

What is rather interesting in this case is the rapid degeneration of the right breast into a malignant condition with metastasis and the rapid fibro-adenomatous growth of the left breast. Adenocarcinoma is not usually regarded as of very rapid growth nor of great malignancy, and is said to occur in the breasts in from three to five per cent of new growths.

The patient has reacted from the surgical trauma, and there should be no reason for an interrupted convalescence, but somewhat prolonged post-operative x-ray treatment will be advised.

Dr. A. A. Law presented the following:

A new-born infant, forty-eight hours old, with a severe and persistent melena neonatorum, was referred to the Surgical from the Pediatric Department.

This child had continued to bleed, notwithstanding repeated subcutaneous injections of whole blood. With the father as donor we attempted to transfuse the child into the right femoral vein. This vein was so tiny and so fragile that even the small needle which we attempted to introduce tore its walls.

We were then driven to use the longitudinal sinus. We citrated the blood taken from the father, as the anticoagulant would eliminate the need of hurry and permit of the slow introduction of the blood. The strength of the citrate was 0.1 per cent. A short, beveled, rather large needle was introduced through the sagittal suture into the longitudinal sinus.

Blood flowing back through the needle determined that it was in the sinus. Thereupon a Kelly forceps was locked upon the needle just next to the scalp to prevent manipulations from thrusting the needle through the other wall of the sinus.

It was then easy, by means of a large Record syringe, very slowly to introduce the blood into the sinus. No untoward symptoms were noted and 122 c.c. of blood was introduced, which stopped the bleeding and raised the child's hemoglobin from 25 to 83 per cent.

In conjunction with a transfusion done on another infant six months ago for the same condition, where the blood was taken from the mother, it is interesting to note that both the father and mother showed positive Wassermann reactions, yet repeated tests of the child's blood after transfusion failed to give a positive

and the child has exhibited no clinical symptoms of lues.

Dr. R. E. Farr presented the following two cases:

1. A boy, aged 6. He was born with a harelip and cleft-palate. He was operated on when an infant, and the lip was closed without reposition of the maxillary bones. This gave the child the usual deformity with the nose well on one side and depressed. A line passing through the center of the face bisected the right ala, the nose being directed to the left.

Two points of interest present: I wish to call attention to the splint which was constructed from a wooden tongue-depressor, and fits the side of the nose perfectly. The wire which passes through the nose from the left, beneath the cheek and below the right superior maxilla, is anchored over this wooden splint. With lead plates or such a splint of any kind necrosis of the skin is common. The second point of interest is the use of a rubber-capped block of wood for the fracture of the nasal bones. Instead of using a tightly rolled piece of gauze, a piece of wood 6 inches long, capped by soft rubber, is struck with a hammer in fracturing the nasal bones. This gives the minimum trauma to the tissues and the additional advantage that the hammer does not come near the face of the patient. (Photographs were shown.)

2. A member of my own family, a boy aged 7. He was brought in in an acute attack of appendicitis, the symptoms being forty-eight hours old. I report this case to call attention to the fact that the appendix was removed under local anesthesia, and present photographs taken before and after the operation to show the mental attitude of the patient. This is the youngest case that I have operated on for appendicitis under local anesthesia, although I have done several laparotomies on younger children, one hernia in a child two years old. This boy has not had vomiting nor thirst and left the hospital walking on the sixth day. (Photographs were shown.)

Dr. H. B. Sweetser presented the following case:

The case I report is of interest in several respects: (1) because of its severity with recovery. (2) because if its rather unusual and rare character; and (3) because of the refusal of the woman, in the face of almost certain death, to reveal how it occurred.

The patient, Miss E., aged 29, a Swede, single, was brought to the City Hospital in the ambulance at 2 A. M., February 18, 1917. She told the following story: About 10 A. M. she was walking along the street when she felt as if something had suddenly dropped out of her. She went into the nearest house, was taken in and put to bed by a woman who was a stranger to her and kept there up to the time the ambulance took her away. She denied that any doctor or woman or anyone at all had performed any operation on her or had touched her in any way, or that she had been sick at all before. This story she stuck to even when told she must die, just before she was anesthetized, and has since refused to change it.

On admission she was suffering only a slight amount of pain; the temperature was normal, and the pulse 72. The abdomen was not distended, and only slightly tender. Protruding from the vagina were about five feet of small intestine as cleanly stripped from the mesentery as if done at autopsy. It was very dark, but not gangrenous. On opening the abdomen, the intestinal coils were not distended, and there were only a

few drachms of dark blood in the cul de sac. The uterus had been perforated in its anterior wall about the internal os, the hole being about one inch in diameter and tightly plugged by the two limbs of stripped bowel and a large piece of mesentery.

The operation consisted of cutting off the protruding bowel in the vagina, having first tightly tied the two ends of the loop near the hole in the uterus. These stumps were cauterized with carbolic acid. The abdomen was then opened, the plug of mesentery and bowel released from the hole in the uterus, the end of the bowel removed back to normal tissue, and an end-to-end anastomosis made. The hole in the uterus was then sutured with catgut in layers, through and through, and this turned in with a Lembert. Ether was poured into the abdomen before the closure. Drain to cul de sac. Recovery.

FRED ELMER LEAVITT, M. D.,
Secretary.

NEWS ITEMS

A hospital is to be built at Killdeer, N. D.

Dr. F. H. Schoonmaker, of Arlington, S. D., died on March 29.

Dr. G. H. Spielman, of Flasher, N. D., has moved to Mandan, N. D.

Dr. James D. Edgar has moved from Minneapolis to Henry, S. D.

Dr. H. F. Kammann, of Hannah, N. D., has located at Taylor, N. D.

Dr. J. W. Powell, of Webster, S. D., is to erect a maternity hospital at that place.

Work on the \$70,000 addition to St. Luke's Hospital at Fargo has been started.

Three or four new cottages are to be added to the buildings for the insane at Willmar.

The North Dakota State Nurses' Association meets in Devil's Lake on April 18 and 19.

Dr. John H. Dorsey, of Glencoe, has returned from California where he spent the winter.

Grand Forks, N. D., has under consideration the employment of a full-time health officer.

Dr. Wm. Friesleben, of Sauk Rapids, has become associated with Dr. P. E. Stangl at St. Cloud.

Twenty rooms are to be added to the Park Hospital at Livingston, Mont., at a cost of \$20,000.

The Norwegian Hospital Society is planning an annex to the St. Paul Hospital, at St. Paul, to cost \$30,000.

The annual meeting of the South Dakota State

Medical Association will be held at Yankton on May 29 and 30.

Dr. H. W. Meyers, of Princeton, N. J., has accepted a position on the staff of the Malmgren Hospital, at Virginia.

An additional physician is to be appointed to assist the five physicians now in the Minneapolis City Health Department.

Dr. J. H. Frank, a practicing physician of Anoka for the past twenty-two years, died at the age of 69 at his home on April 1.

The Minnesota Homeopathic Institute (the State Association of the Homeopaths), meets in St. Paul on May 8, 9, and 10.

Dr. J. P. Rosenwald, of Minneapolis, has been appointed first lieutenant in the medical corps of the First Minnesota Field Artillery.

Dr. E. H. Grove, of Hetland, S. D., has moved to Arlington, S. D., and taken over the practice of the late Dr. F. H. Schoonmaker.

The annual report of the McKennan Hospital of Sioux Falls, S. D., shows that the hospital received 1,070 patients during the year 1916.

A bill has been introduced in the Minnesota Legislature authorizing a fourth State Hospital to be located somewhere north of Pine County.

An examination of nurses will be held by the Minnesota State Board of Examiners at the capitol in St. Paul beginning at 9 A. M., April 27 and 28.

The North Dakota State Medical Association will hold its annual meeting at New Rockford on May 9 and 10. The program appears on another page.

Dr. T. F. Hammermeister, of New Ulm, is spending a month in postgraduate work at the New York Polyclinic Hospital and Medical School.

The Red River Valley Society held its annual meeting in Crookston last month. Papers were read by Drs. G. J. Thomas and J. L. Lewis, of Minneapolis.

Cerebrospinal meningitis has been declared epidemic in Minneapolis. About twenty-five cases have occurred in the city since January 1, and the death-rate has been large.

Dr. J. P. Weyrens, of Taylor, N. D., who is a graduate of the Medical School of the University of Minnesota, has received appointment to a fellowship in the Mayo Foundation.

Dr. J. H. Sampson, of Mallette, S. D., died

last week at the age of 54. Dr. Sampson was drowned in a swollen stream which he attempted to cross in the night when visiting patients.

Dr. M. A. Hatch, of Minneapolis, has been convicted of manslaughter, the death of his patient resulting from criminal abortion. Dr. Hatch admitted performance of the operation.

Dr. Henry L. Ulrich is giving a course of lectures at the University of Minnesota to assist in the training of women students who they may offer their services to the American Red Cross Society.

It is reported that the Medical School of the University of Minnesota will have a woman student from Poona City, India, next fall. There are said to be two Hindu women now in American schools.

The new Kelly Hotel building at Rochester has been converted into a hospital under the management of the Roberts Hotel Company, and will be called "The Stanley," after the late Dr. Henry Stanley Plummer.

Dr. J. A. Mattson, a resident of Chisago City and a graduate of the Medical School of the University of Minnesota, died at his home March 16, at the age of 43, following an attack of quinsy and an abscess of the throat.

The National Tuberculosis Conference will be held in Cincinnati on May 9-11. Many Northwestern medical men and women interested in this line of work will attend; and it is hoped that special cars may be obtained for the party.

At the annual meeting of the Woman's Auxiliary of the Hennepin County Medical Society the following were elected officers: President, Mrs. L. M. Crafts; vice-president, Mrs. G. E. Benson; corresponding secretary, Mrs. O. W. Yoerg; recording secretary, Mrs. J. R. Petersen; treasurer, Mrs. L. F. Foote; auditor, Mrs. C. C. Tyrell.

Plans for the celebration of Baby Week are being made in over thirty states. Different states will consider different phases of baby welfare; and it is safe to assume that the information on the subject spread abroad will have an inestimable value. The physicians of America must be the mainstay of the movement. Minneapolis' Baby Week is from May 1 to May 5.

The annual meeting of Alienists and Neurologists will be held Monday, July 9 to Thursday July 12, 1917, in the LaSalle Hotel, Chicago, under the auspices of the Chicago Medical Society.

Dr. George A. Zeller will act as Chairman. The program will be mailed June 28, with abstract of each paper. Contributors to the program are solicited. This is a society without a membership fee.

The offer of the University of Minnesota to establish and maintain a base hospital in case of war was accepted by the officials of the American Red Cross, and the three hundred surgeons, physicians, nurses, and attaches tendering their services, are now subject to call for service at home or abroad. Drs. W. J. and C. H. Mayo have offered \$15,000, or half the estimated expense of maintenance. Dr. A. A. Law, of the University Medical School, heads the movement.

POSITION IN OFFICE WANTED

Nurse with knowledge of bookkeeping and stenography desires position in a doctor's office. Phone Nicolet 2947, or address 479, care of this office.

PHYSICIAN WANTED

Young doctor is wanted to locate in a wide-awake town. Good chance to work up a practice. Write President of Alberta Commercial Club, Alberta, Minn.

MEDICAL BOOKS AND INSTRUMENTS FOR SALE

The medical books, instruments, and medicines belonging to the late Dr. John Knight, of Redby, Minn., are for sale. Address Mrs. John Knight, Redby, Minn.

PHYSICIAN WANTED

Fine location—village of 300 in Southern Minnesota. Large territory tributary; at least \$100.00 per month guaranteed from the start. Address 488, care of this office.

PHYSICIAN WANTED

A good physician is wanted in a west central Minnesota town of mixed population. A German- or English-speaking doctor preferred. Address 481, care of this office.

PHYSICIAN WANTED

We desire the services of a good physician. Will pay \$125 per month, with room and board. Give particulars. Jordan Sulphur Springs and Mud Bath Sanitarium, Jordan, Minn.

OFFICE POSITION WANTED

Young woman with experience as stenographer and bookkeeper desires position as office assistant in a physician's office in Minneapolis. Best of reference. Address 478, care of this office.

LOCUM TENENS WANTED

A physician, licensed in Minnesota, is wanted to substitute on the staff of the Nopeming Sanatorium during the month of May. Address Superintendent, Nopeming Sanatorium, Nopeming, Minn.

OPENING FOR A DOCTOR

A splendid opening for a doctor and druggist in a town of 200. Doctor must be Scandinavian. Good territory, no competition. For information, write Clay County State Bank, Hitterdal, Minn.

POSITION WANTED BY NURSE

A Chautauqua School nurse desires a position in a physician's office, in a private office, or with a physician where she can have practical work continuously at a reasonable salary. Address 486, care of this office.

FOR SALE

Practice of \$3,500 to \$4,000 in a village of 600 in Southern Minnesota. Collections 95 per cent. Town has high school and electric lights. No real estate. Might form partnership. Address 487, care of this office.

OFFICE FOR RENT

An excellent location on one of the best corners of East Lake Street, Minneapolis, in a modern building. Dentist shares reception room. Present tenant desires to move down town. Address Dr. O. R. Bryant, 802 E. Lake Street, Minneapolis.

LOCATION OPEN

A fine opportunity to step into a practice of a doctor in one of the best towns in Northern Minnesota. Town has electric lights and waterworks and a modern school costing \$45,000. The creamery in town does a business of \$150,000 a year. This needs a quick reply. Address 484, care of this office.

A GOOD LOCATION IN A LIVE NORTH DAKOTA TOWN

Here is a chance for a good physician and surgeon after April 1. The field is large, and pay is of the best. If you are looking for something better than what you now have at hand it will pay you to investigate. For all particulars write us and send all references in first letter. No practice or office to buy. Nyal Drug Store, Hannah, N. D.

PRACTICE FOR SALE

A \$6,000 practice with collections of over \$5,000 in southern Minnesota town of 500. Unopposed. Railroad center and railroad surgeon appointment at this point. I desire to do post-graduate work. Wish to sell house and lot, Buick roadster, and office equipment. \$4,500 takes the whole. Population is mixed with German predominating. Nearest competition is nine miles. Address 476, care of this office.

SPLENDID LOCATION OPEN

A Catholic doctor who can talk some German will find a very good opening in a small, fast-developing town in Montana. Large territory; fine climate. This is an excellent opportunity for a young man who is willing to get out and hustle and wants to get a start. Can point out similar places where young doctors started out in such small places under about the same conditions and made fortunes in less than ten years. For further information, address 485, care of this office.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Ada	1,253	1,432	2	1		2												
Albert Lea	4,500	5,192	10	1														
Alexandria	3,681	3,001	3															
Anoka	3,769	3,972	5			1												
Austin	5,474	6,960	13	2		5												
Barnesville	1,326	1,353	2			1												
Benndji	2,183	5,099	2			1												
Benson	1,525	1,677	2			1												
Blue Earth	2,900	3,319	2															
Brainerd	7,524	8,526	16			4												
Breckenridge	1,282	1,840	1															
Canby	1,000	1,528	6															
Cannon Falls	1,239	1,385	4															
Chaska	1,265	2,050	1															
Chatfield	1,426	1,226	2															
Cloquet	3,074	7,031	5															
Crookston	5,359	7,559	7			2												
Dawson	962	1,318	3															
Detroit	2,060	2,807	2			1												
Duluth	52,968	78,466	119	8	4	22	1	0	2	0	0	0	1	0	3	8	1	11
East Grand Forks	2,077	2,533	3	1														
Ely	3,572	3,572	6		2	1												
Eveleth	2,752	7,036	6		2													
Fairmont	3,440	2,958	2			1												
Faribault	7,868	9,001	9															
Fergus Falls	6,072	6,887	5		1													
Glencoe	1,788	1,788	4															
Glenwood	1,116	2,161	7	2														
Granite Falls	1,454	1,454	2			1												
Hastings	3,811	3,983	5	1	1	1												
Hutchinson	2,495	2,368	4															
International Falls		1,487	3															
Jordan	1,270	1,151	2			1												
Lake City	3,142	3,142	4	1		1												
Le Sueur	1,937	1,755	0															
Little Falls	5,774	6,078	3															
Luverne	2,223	2,540	3			1												
Madison	1,336	1,811	0															
Mankato	10,559	10,365	27			4												
Marshall	2,088	2,152	2															
Melrose	2,591	2,591	3															
Minneapolis	202,718	301,408	443	34	2	61	7	1	0	0	0	0	0	3	8	36	0	25
Montevideo	2,146	3,056	1															
Montgomery	979	1,267	3			1												
Moorhead	3,730	4,840	8			2												
Morris	1,934	1,685	1															
New Prague	1,228	1,554	2	1														
New Ulm	5,403	5,648	14	1														
Northfield	3,210	3,215	6				1											
Ortonville	1,247	1,774	0															
Owatonna	5,561	5,658	7															
Pipestone	2,536	2,475	3			1												
Red Lake Falls	1,666	1,666	0															
Red Wing	7,525	9,048	13	2		4												
Redwood Falls	1,661	1,666	8	1														
Renville	1,075	1,182	1															
Rochester	6,843	7,844	39	2	2	4												
Rushford	1,100	1,011	3			1												
St. Charles	1,304	1,159	2			1												
St. Cloud	8,663	10,600	20	2	2	4												
St. James	2,102	2,102	3															
St. Paul	163,632	214,744	283	24	9	44	1	0	0	0	2	0	1	0	3	24	1	8
St. Peter	4,302	4,176	1															
Sauk Centre	2,154	2,154	2															
Shakopee	2,046	2,302	3	1	1													
Sleepy Eye	2,046	2,247	2															
South St. Paul	2,322	4,510	3															
Staples	1,504	2,558	1															
Stillwater	12,318	10,198	2	1														
Thief River Falls	1,819	3,174	6			1												
Tower	1,111	1,111	3			2												
Tracy	1,911	1,826	4	1														
Two Harbors	3,278	4,990	5			3												
Virginia	2,962	10,473	11			2												
Wabasha	2,622	2,622	*															
Warren	1,276	1,613	1															
Waseca	3,103	3,054	3	1														
Waterville	1,260	1,273	0															
West St. Paul	1,830	2,660	1			1												
Willmar	3,409	4,135	3	1														
Winona	19,714	18,583	30	1		5												
Winthrop	813	1,043	1															
Worthington	2,386	2,386	3															

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Fueral Septicemia	Accidental Deaths
Adrian	1,258	1,112	1												1			
Aitkin	1,719	1,633	1															
Akeley			2			1											1	
Appleton	1,184	1,221	3												1			
Belle Plaine	1,121	1,204	5			1											1	
Blwabik		1,690	3			1												2
Bovey		1,377	0															
Browns Valley	721	1,058	0															
Buffalo	1,040	1,227	1															
Caledonia	1,175	1,372	2	1														
Cass Lake	546	2,011	4	1		1												
Chisholm		7,684	5			3												
Coleraine		1,613	2			1												
Delano	967	1,031	0			1												
Farmington	733	1,024	1														1	
Fosston	864	1,055	2												1			
Frazee	1,000	1,645	1															
Grand Rapids	1,428	2,239	3														2	
Hibbing	2,481	8,832	8			5											1	1
Jackson	1,756	1,907	3														1	
Janesville	1,254	1,173	0															
Kenyon	1,202	1,237	1															
Lake Crystal	1,215	1,038	2															
Litchfield	2,280	2,333	6		1	2											2	
Long Prairie	1,385	1,250	4			1												
Madelia	1,272	1,273	2			1												
Milaca	1,204	1,102	0															
Mountain Lake	959	1,081	2	1														
Nashwauk		2,080	2															
North Mankato	939	1,279	1			1												
North St. Paul	1,110	1,404	5															
Osakis	917	1,013	2	1														
Park Rapids	1,313	1,850	4														1	
Pelican Rapids	1,033	1,019	1		1													
Perham	1,182	1,376	4															
Pine City	993	1,258	2															
Plainview	1,038	1,175	2															
Preston	1,278	1,193	0															
Princeton	1,319	1,555	7			1												
St. Louis Park	1,325	1,743	2	1														
Sandstone	1,189	1,818	3			1												
Sauk Rapids	1,391	1,745	4															
South Stillwater	1,422	1,343	0															
Springfield	1,511	1,482	1															
Spring Valley	1,770	1,817	3			1											1	
Wadena	1,520	1,820	4					1									1	
Wells	2,017	1,755	0															
West Minneapolis	2,250	3,022	2			1												
Whipaton	1,132	1,300	1															
White Bear Lake	1,288	1,505	2															
Windom	1,944	1,749	3			2												
Winnebago City	1,816	2,555	4			1												
Zumbrota	1,119	1,138	1			1												

STATE INSTITUTIONS

Anoka, Asylum	2	2																
Faribault, School for Blind	0																	
Faribault, School for Deaf	0																	
Faribault, School for Feeble Minded	4					1	1											
Fergus Falls, Hospital for Insane	12	2																1
Hastings, Asylum	6	2																1
Minneapolis, Soldiers' Home	12															1		2
Owatonna, School for Dependents	0																	
Red Wing, State Training School	0																	
Rochester, Hospital for Insane	12					3												
Sauk Centre, Home School for Girls	0																	
St. Peter, Hospital for Insane	17	3				3											1	2
St. Cloud, State Reformatory	0																	
Stillwater, State Prison	0																	

OTHER PARTS OF STATE

	1046	82	8	147	5	5	3	0	5	1	1	3	37	50	4	37
Total for state	2491	186	35	365	16	7	5	0	7	1	5	10	61	158	12	111

*No report received. REGISTRAR not doing his duty.

135 stillbirths not included in above totals.

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The laboratory is a hand maiden of modern medicine whose importance grows constantly. Actual tests are such a help in diagnosis, replacing fallible human judgment with the certainty of science, that the increasing use of them is not to be wondered at. The reports of the clinical laboratories of the Battle Creek Sanitarium for 1916 show not only the number but the variety of the examinations necessary in a great institution of healing. The total was 62,582. As there were about 7,000 patients in the year, the average per patient was about 9. Here are a few samples of the work done:

Bact. exam. for diphtheria	153
Bact. exam. of sputum	604
Bact. exam. of feces	7,168
Bact. exam. of pus	121
Bact. exam. of bile	94
Exam. of blood for malarial plasmodium.....	98
Autogenous vaccines	92
Blood examination for blood count and hemoglobin	11,766
Differential leucocyte count.....	6,660
Chem. exam. of gastric fluid.....	1,922
Quantitative uranalysis and micro. exam.....	21,281
Pathological exam. of tissue.....	445
Non-protein nitrogen	471
Urea of blood	110
Creatinin	437
Epsteins test for blood sugar.....	53
Fecal inspection for capsular motility test.....	984
Capsule digestives motility test, July to December, inclusive	833

THE BEEBE LABORATORIES

When Dr. W. L. Beebe began public laboratory work in 1911, he at once gave evidence that he fully comprehended the value of the public laboratory to private practice; and his work was so conscientiously and scientifically done that he soon gained the absolute confidence of our best practitioners. Today the Beebe Laboratories occupy extensive quarters, and are doing a work that has made a distinct impress upon medicine in

the Northwest, for they have brought the scientific methods of today to the office of every physician, and indeed to the home of every person, however remote from a postoffice.

Their scientific work is simply unexcelled; and we trust there is not a physician in the Northwest now unfamiliar with the advantages offered by public laboratories in the matter of scientific diagnosis.

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The European war has made it impossible for Americans to go abroad for hydrotherapeutic treatment. In consequence, the spas of this country will be patronized hereafter more than they have been before, and Americans will be delighted to learn that they can receive the same kind of treatment in this country as they have been used to getting in France, Germany, and Austria.

The best known spa in America is the French Lick Springs, where the water possesses virtues equal to those of the great Continental spas. In addition to the excellence of the medical attendance, the sojourner at French Lick is certain of delightful hotel surroundings and most pleasant environment. French Lick, in addition to its other attractions, is the home of Pluto Water, where the most improved apparatus is used throughout the bottling plant, and every known sanitary precaution has been taken to insure the purity of this famous water.

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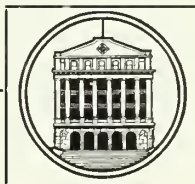
PUFFED WHEAT—WHAT IT IS

The nutritive value of whole wheat as a permanent article of diet has long been known and its use has been advocated by physicians for years. One objection of the past has been the unpalatableness of the usual forms and especially has this been true in the feeding of children.

It is interesting to note the change in the attitude of the child since the popular invention of Prof. A. P. Anderson (Puffed Wheat) has been marketed. No longer does the junior member of our household refuse. Quite the contrary: he demands.

The invention itself is no less interesting. Scaled in guns, the whole grains of wheat are revolved for an hour in 550 degrees of heat. Thus the moisture in each food cell is turned to superheated steam. When the guns are shot these food cells—over a hundred million per kernel—explode. The whole wheat grain is transformed into thin, airy, flaky bubbles, eight times their normal size.

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The advantages of institutional treatment for stomach and intestinal disorders, Neurasthenia, Heart Disease, Diabetes, Obesity, Nephritis, Rheumatism and other stubborn chronic maladies are worthy of consideration.

A most important advantage is the isolation of the patient from harmful influences, substituting conditions and surroundings that are altogether recuperative and reconstructive. To have the patient constantly under observation for the necessary period of time, is greatly to the advantage of the attending physician.

At Battle Creek, every case receives, first of all, a careful examination. Each patient is submitted to the X-Ray and other thoroughgoing methods of investigation, which can scarcely fail to reveal the true nature and extent of his difficulty.

The diet is carefully supervised by the physicians, assisted by specially trained dietitians. Each prescription is based upon the individual requirements of the patient.

At regular and suitable periods, corrective gymnastic classes are conducted by expert physical directors and here again strict attention is given to the individual needs, as indicated by the general physical examination, which includes a scientific "strength test" of the whole body.

Another special advantage of treatment at Battle Creek is the opportunity for educating and training the patient in health habits by means of which he may, with the aid of his family physician, maintain a standard of health and efficiency.

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The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, MAY 1, 1917

No. 9

CARDIOVASCULAR LUES*

By CHARLES LYMAN GREENE, M. D.

ST. PAUL

But yesterday our exact knowledge of cardiovascular syphilis might have been written upon a postal card. Today it boasts a tremendous literature and embraces important diseases seemingly wholly alien to their basic cause.

The discovery of the *treponema pallidum*, its fortuitous and roundabout but definitive articulation with complement-fixation, the allergic test of Noguchi, and our increased ability to demonstrate *treponema pallidum* in the diseased tissues, have transformed etiologic assumption and suspicion into actuality, and made the use of the terms "para"- or "meta"-syphilis, or even "luetie sequelæ," an anachronism.

We know now that from the time of the initial lesion to and through that of tertiary manifestations, even decades removed, we are dealing with actual syphilis—with the activities of the living causative microorganism.

Cardiovascular syphilis embraces a large part of toxemic, primarily degenerative arterio- or athero-sclerosis, a yet greater and more important proportion of the cases of obliterative endarteritis, a large number of myocardial impairments, and nearly the whole of chronic productive mesaortitis and mesarteritis.

Many cases of chronic hypertensive renal disease must be added, together with the specialized obliterative endarteritis of the basal cerebral vessels, so potent in precocious or fifth decade apoplexies. Recent investigations, however, add locomotor ataxia and general paresis to syphilis,

almost, if not quite, *in toto*, and *cardiovascular* lues is evidently the basic factor in each.

In tabes the primary change is a luetic leptomeningitis, with most extensive involvement of the arteries, marked infiltration, and a perivascular inflammation, which follows the arterial pathways to the selective areas of attack.

In parietic dementia we find with astonishing frequency syphilitic mesaortitis of some grade, basal luetic obliterative endarteritis, commonly, and, constantly, in the cortex, a luetic endarteritis.

In the case of each, the percentage of positive Wassermann and luetin tests, and repeated demonstration of *treponema pallidum* in the tissues, have shown them to be the best representatives of the effects of selective endarteritic cardiovascular lues and the leading examples of cerebrospinal syphilis. To the list must be added:

Myelitis	50 per cent
Congenital mental defect.....	50 per cent
Epilepsy	50 per cent
Paroxysmal hemoglobinuria.....	100 per cent
Primary optic atrophy.....	100 per cent
Disseminated sclerosis	30 per cent
Infantile cerebral palsy.....	50 per cent plus
Precocious and fifth decade apoplexies	50 per cent plus
and several other conditions.	

With respect to paresis, the stress of urban life and congenital vascular inadequacy when imposed upon a syphilitic are the potent factors in localization. Thirty to forty per cent of the male residents seeking hospital admissions in

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

Berlin are said to be paretics, but it is rare amongst those coming from the country.

Kraft-Ebing's etiologic reference of this ailment to "civilization and syphilization," is proven now to be more than a striking phrase.

Obviously, no one save the inspired author of the first chapter of the Book of Genesis might hope to possess a gift of concentrated expression adequate to the discussion of this enormous topic in the fifteen minutes allotted for this paper. Therefore, the writer will deal only with certain basic statistical facts, and limit his discussion to the most anatomically characteristic and clinically complex cardiovascular expression of acquired syphilis, namely, chronic productive luetic mesaortitis. To emphasize the importance of this condition one need but know the following facts:

1. Ninety per cent of all persons dying of syphilis will show microscopic or macroscopic mesaortitis, and in more than 50 per cent it will prove to be the actual cause of death.

2. Eighty per cent of the symptomatically recognizable cases present aortic regurgitation.

3. In all cases embraced in this sub-group, more or less decided impairment of the coronary flow results, although in but 10 per cent is angina pectoris major present.

4. About 90 per cent of these cases become manifest by decided clinical signs between the ages of thirty and sixty. (Fourth decade, 25 per cent; 5th decade, 50 per cent; 6th decade, 15 per cent.)

5. It kills at the very prime of life, is peculiarly intractable and progressive once severe decompensation is established, constitutes one of the most disabling, harassing, and painful, of all lethal ailments, and is a not infrequent cause of sudden death.

6. In no chronic disease is early diagnosis more desirable or less frequently attained.

It is asserted that the United States now contains approximately 2,700,000 adults carrying some grade of syphilitic aortitis; that of these, 2,160,000 are men, 540,000 women, a large proportion of the latter and a small number of the former being wholly unaware of past infection. Ninety per cent are found to deny infection under routine case-taking, and one-half of them in the face of positive complement-fixation tests.

The following are among the latest results reported with relation to the prevalence of syphilis itself:

Hubert reports 8,652 consecutive admissions

to a general hospital service, with 8.8 per cent positive Wassermanns.

All admissions to Bellevue and Presbyterian Hospitals, New York, show 20 per cent positives.

The same procedure at Peter Bent Brigham Hospital, Boston, showed 15 per cent positives.

An extended investigation by the United States War Department (Vedder) showed that nearly 17 per cent (16.88) of accepted recruits were Wassermann positive; and upon the basis of results obtained at West Point, it is asserted as probable that 5 per cent of college students are infected.

From 3 to 6 per cent of babes under one year are victims of hereditary syphilis.

These figures, though startling, are quite in correspondence with those of other highly civilized and Christian countries. Though almost unknown as a *written* cause of death, it is evident that syphilis must kill annually an army of men in the very prime of life, after a sneaking, insidious course, extending usually over many years. It is the slow poisoner and concealed assassin of many who have long thought themselves cured, and its cardiovascular types are more fatal than all other syphilitic lesions combined.

The inadequacy of our therapeutic methods is demonstrated clearly by the experience of life insurance companies. These have always exacted at least the evidence of effective, long-continued treatment and prolonged freedom from clinical symptoms, yet Deneke accurately asserts that a history of past syphilis means an increased death-rate 68 per cent in excess of the expected mortality. Recently published statistics show an astonishing selective distribution of the excessive death loss. The "Gotha," for example, finds that in insured syphilitics the following causes of death showed the tremendous increases set opposite them, namely:

Malignant growths, 60 per cent over normal loss from that cause

Renal disease	64 per cent
Gastro-intestinal	84 per cent
Cardiovascular	116 per cent
Apoplexy	128 per cent
Mental and nervous diseases.....	145 per cent
Suicide	122 per cent

Without further comment we pass to our main topic:

Chronic Productive Mesaortitis.—One must distinguish the inflammatory or sub-inflamma-

tory luetic mesarteritis from the degenerative arteriosclerosis or atherosclerosis, which represents the commonest expression of vascular disease. Mesarteritis is not primarily degenerative, but irritative and destructive; atherosclerosis as a type is degenerative from beginning to end. The former represents in all probability the direct activity and actual presence of the pathogenic microorganisms, the latter a low grade of toxemia from any one of many sources, one of the chief of which is syphilis.

Nothing is more striking than the degenerated rigid "pipe-stem" arteries of certain cases of congenital syphilis; and lues can either itself initiate, or blend its endarteritic changes with any type of toxic degenerative arterial disease. Moreover, the luetic nature of its endarteritic types is usually readily demonstrable in the earlier stages. In all of its irritative, inflammatory or subinflammatory forms the disease is as avid of lymphatics and veins as of arteries, and exhibits a tendency to selective involvement, whether of certain regions, mere sections of an affected vessel, or predominantly focal attack.

In syphilitic productive mesaortitis, the site of election is the first portion of the aorta, and the patchy involvement may be sharply delimited. If the arch itself is involved, only rarely does the process extend beyond its transverse portion, though the terminal thoracic segment is occasionally an initial site.

Luetic mesaortitis elsewhere is so rare as practically to exclude syphilis as its cause. Mesaortitis luetica may be said to be limited to the adventitia and media. The disease begins in the perivascular tissue and extends inward along the course of the nutrient vessels (*vasa vasorum*), whose sheaths are seats of marked small-cell infiltration, consisting chiefly of lymphocytes and plasma cells. Within the infiltrated zones localized necrosis occurs, and in these areas groups of the treponema may be demonstrable. In the media, areas of complete destruction and solution of fiber-continuity may occur. In active cases the zones of necrosis, reparative fibro-plastic activity and actual fibrosis may coexist. In the peripheral areas giant cells are found.

The early involvement of the *vasa vasorum* and the direct action of *treponema pallida* and its toxin are the chief factors in the peculiar "line of march" of this process and the patchy distribution of its lesions. The intima may escape wholly the destructive process, and merely show

some late fibrosis and possibly an irregularly distributed subendothelial proliferation.

These microscopic changes are more or less clearly reflected in the macroscopic appearance of the inner surface of the affected portion of the aorta. Curious opaque, succulent, circular elevations, or tubercles, alternate with or are irregularly disseminated among sharply defined (punched out) depressions and pits, these often showing some translucency at their bases and a peculiar "silky crinkling" of the endothelial lining. Many investigators have found the *treponema pallidum* in the affected tissues.

Such is the luetic mesaortitis of Francis H. Welch, some time Professor of Pathology at Netley, who first described its important features, microscopic and macroscopic, in 1875, and asserted strongly its luetic origin. Long afterwards Döhle, Heller, Benda, Chiari, and many others refined the investigations of Welch. Somewhat ungraciously, Continental, American, and even certain British writers refer to this "chronic productive syphilitic aortitis of Francis Welch" as the "Döhle-Hellersche Aortitis."

It is manifest that both the symptoms and results of this condition will vary greatly with the site of the lesion. The nearer the site of the inflammatory process to the aortic ring, the greater the damage and the more pronounced the symptoms. Obviously, the weakened walls tend to yield, and upon the question of excessive focal activity, or a relatively extended diffusion of the destructive changes, depends the production of aneurysm on the one hand, or a mere diffuse dilatation or increased pulsatory excursion, upon the other. Obviously, the commonest type of involvement, namely, that of the first portion, must tend to weaken and enlarge the aortic ring, and in 80 per cent of the cases of luetic mesaortitis such a secondary aortic insufficiency is established.

The valves themselves are usually more or less wrinkled, thickened, and shortened; extension to the anterior mitral segment is not uncommon; and even a mitral stenosis may result.

Inclusion of the sinuses of Valsalva and the coronary apertures is almost inevitable in such cases, and the wonder is that in only 10 per cent of the cases does major angina pectoris occur. The coronary orifices may be reduced to pin-point size in such instances. It is almost equally strange that in only 10 per cent do we find true aneurysm. It is generally stated that in this disease blood-pressure is normal, the heart but

slightly affected, dilatation slight, hypertrophy laggard, and compensation poorly achieved in the instances of aortic involvement.

Such sweeping statements are most misleading.

High systolic pressures and a greatly increased pulse-pressure accompany all free aortic regurgitations; and renal impermeability is a relatively common accompaniment and may produce high systolic and diastolic pressures, which exercise a most disastrous effect upon a weakened artery or an inadequately nourished or definitely toxic and degenerated myocardium.

The statement that the heart is but slightly affected when the coronaries are free and aortic regurgitation absent must, of course, often be true, but many exceptions must be noted by your essayist on the basis of observed cases of aneurysm of the arch, no less than our growing knowledge of the relative frequency of early and late luetic myocardial involvement, although the former and indirectly, no doubt, the latter, in great measure, are checked by the early institution of antiluetic treatment.

The assertion of a famous German clinician that good compensation in an aortic regurgitant lesion proves it to be non-syphilitic, is certainly false, for your essayist has seen many instances of excellently maintained cardiac reserve over long periods in men doing hard manual labor. It is strikingly true that once the break in compensation is permitted to occur under our present laggard diagnosis and therapy, its repair is extremely difficult and seldom more than partial and temporary. As stated previously, early diagnosis and treatment are more essential here than in any other cardiovascular ailment, and these hearts often prove as responsive to rest, with mercury or fractional doses of salvarsan, as they are resistant to digitalis in their terminal stages. They are not especially resistant to this drug in the lesser myocardial decompensatory periods, and this fact should be known and acted upon.

With respect to retarded and sluggish hypertrophy, it is evident from the nature of the process that only in cases of involvement of the aortic valve is there with constancy any necessity for decided hypertrophy, and equally obvious that the relatively gradual production of free regurgitation would limit primary dilatation and slow the rate of hypertrophic changes. The aorta is lengthened and the heart apex lowered.

SYMPTOMS

Time permits but a hurried review of the symptoms of this important condition. Fortunately, for the greater part they are those of simple aortic regurgitation and, to a lesser degree, of angina pectoris and aortic aneurysm, with which conditions you are perfectly familiar.

Aside from aneurysmal cases luetic mesaortitis is peculiarly a disease of subjective expression, and this assertion applies, measurably, even to the cases of the aortic regurgitant type.

The first matter to be considered, therefore, is the proper evaluation of its subjective symptoms.

Pain and Discomfort.—The character and degree of pain encountered depends upon the presence of several factors, chief of which are: (a) the presence or absence of true aneurysm, (b) the actual degree of hyperdistension or distensibility and diminished aortic reserve, (c) disease of the coronary arteries, and (d) myocardial weakness from any cause whatsoever.

One must remember that the chief sources of pain in hollow muscular viscera are (a) overdistension, (b) spasmodic contraction, and (c) effort that exceeds muscular reserve, namely, obligatory overstrain with underlying weakness and insufficiency.

That pain arises from coronary sclerosis of itself cannot be maintained in the light of modern investigations showing extensive sclerosis without angina pectoris and typical "heart-pang" in the entire absence of sclerosis. That a temporary insufficiency of the intrinsic blood supply may result in weakness and pain, especially under emotional stress or effort, is certain, and is readily explained by the instantaneous reflection of blood-shortage in a heightened myocardial irritability and narrowing of the field of painless muscular response. One additional cause of pain is encountered in aortitis, namely, pressure, and it should be remembered that luetic aneurysm, by its preferred locations, is especially adapted to the production of pressure symptoms related to the diverse and important structures which traverse the mediastinum.

The commonest source of error in relation to aortitis is the failure to remember that the clinical meaning and significance of a mere sense of constriction, oppression, or crowding, may be exactly the same as the vise-like gripping or the rending, tearing, pain of major angina pectoris. Of no less importance is the misleading fact that anginal pain and discomfort are very frequently

maximal in the epigastrium, or over a wider upper abdominal area.

Your essayist has pointed out frequently, of late years, the fact that miniature replicas of angina pectoris exist, and that the cardiovascular pain-complexes are often mere fragments or, at best, imperfect mosaics. Many indeed, or most, of the cases of luetic, rheumatic, variolar, scarlatinal, influenzal, or gonococcal aortitis, may wholly lack severe pain, and he who waits for it to appear in its typical form will accomplish little for his patients. Aortic pain of severity may or may not radiate from mid-sternum, or mid-sternum and epigastrium, to the left arm, shoulder, wrist or fingers, to the neck, or the roots of the lower molars. It may be both left and right-sided, or may, rarely, affect the right side alone, involving in its cephalic radiation the same (brachial plexus) distribution wholly or partially in each instance.

Dyspnea.—No ailment presents more striking and dramatic dyspneic pictures than may aortitis in its advanced stages, but in none should one seek more carefully for the far more important lesser or masked manifestations.

Its most extreme forms are (1) cardiac or aneurysmal asthma, often absolutely indistinguishable from bronchial asthma, unless suggestive associated or interval-pain and characteristic physical signs are present; (2) laryngeal spasm, a most distressing symptom usually due to pressure upon the recurrent laryngeal nerve; and (3) an abruptly enforced orthopneic dyspnea which instantly and imperatively brings the recumbent patient to a sitting or even standing posture, and, in the author's experience, is associated usually with a conviction of impending dissolution, suggesting its relation to angina pectoris.

Instant death may result from a natural but mistaken effort on the part of the attendant to enforce the recumbent or semirecumbent posture in such instances.

Another interesting variant of obligatory orthopnea is that which forces the patient to lean far forward day and night.

None of the preceding or following forms of dyspnea or pain are peculiar to luetic aortitis. They may be encountered frequently in mediastinal tumors of almost any sort and especially in progressive enlargement of the mediastinal glands in Hodgkin's disease.

Of far more importance in relation to early diagnosis are the minor dyspneic variants. Amongst these are (a) slight exertion dyspnea,

(b) inability to walk against a wind or in cold air without inducing breathlessness or precordial oppression, (c) excessive sensitiveness to a close atmosphere, (d) frequent sighing, (e) a mere subjective sense of deficient lung-ventilation, (f) inability to hold the breath on command or at will.

Such symptoms may precede by months the more serious manifestations of arterial or myocardial insufficiency.

Narrowing the Cardiovascular Field of Response.—With respect to both physical and mental exertion, one may perceive as one of the earliest symptoms of this lesion a narrowing of the field of effortless, fatigueless response. So marked may this be as to lead physicians in most instances to diagnose, and treat the condition as a "neurasthenia," that bastard euphemism for "don't know."

Physical Signs.—With respect to the physical signs, little need or can be said without entering into a useless description of aortic regurgitation, aneurysm, aneurysmal dilatation or angina pectoris.

Röntgenoscopy and röntgenography afford important information. Both the screen and plate should be used with sagittal and oblique exposures; and, in the absence of either actual aneurysm or diffuse dilatation, the quality and outline of the aortic shadow itself and any increased range of pulsatory excursion should be carefully noted.

Percussion.—This is of slight value relatively, but one should always test the note over the manubrium, 3d interspace, 3d rib, and second interspace on the right for the dullness "*en casque*" of Potain, and inspect and palpate carefully for expansile pulsation.

Auscultation.—The character of the second sound as heard over the third left interspace may be of the utmost value before any considerable degree of aortic leakage is established. It may be blurred and murmurish, but an important variant is the split second sound described long ago by the writer which may be present persistently or intermittently long before the true murmur appears, and may later alternate with the short imperfect diastolic bruit even during a single clinical séance.

Much emphasis is laid upon a clanging second tone by some writers, but it can hardly be regarded as in any sense pathognomonic, or differentially as of great importance, though it certainly suggests aortic dilatation or sclerosis.

The same may be said of the palpation of the lengthened aorta in the suprasternal notch.

Obviously, the fundamental factors are—

1. Aortic aneurysm involving the first portion, or the transverse portion of the arch.
2. Diffuse dilatation in the same areas.
3. Aortic regurgitation first becoming manifest above the age of 30 or even 25, and in some degree all aortic regurgitations not directly attributable to other known causative illnesses.
4. Symptoms suggestively mediastinal in origin.
5. Angina and dyspnea, major or minor, frank or masked.
6. Subjective manifestations of impaired reserve.
7. A positive Wassermann or luetin test or frank evidences of syphilitic infection.
8. A favorable response to proper antiluetic medication.

It should be borne in mind that demonstrable peripheral arteriosclerosis present or absent is of no importance in relation to diagnosis.

A man may drop dead from luetic mesaortitis when every accessible artery is as soft as a baby's.

A few words of caution may not be misplaced with reference to the diagnosis of a condition of most extreme interest and importance. It must be remembered that exceptions exist to every rule, and that before one jumps to the conclusion that he is dealing with cardiovascular syphilis he must first of all be sure that the patient reacts positively to the Wassermann or luetin tests, and that these have been made by men thoroughly competent to perform and to interpret them.

In the case of the Wassermann test it cannot be stated too emphatically that no one save an expert serologist can be trusted to do accurate work and that a vast number of reports, now made the basis of opinion and action of the utmost importance to the individual affected, are not worth what they are written upon. Furthermore, it must be remembered also that the mere fact that a Wassermann coexists with angina pectoris or aortic leakage, does not absolutely prove that the lesion is luetic.

It should also be stated that experience has proven that Ehrlich erred in sounding a warning against the active treatment of luetic vascular lesions. They should not only be treated, but any measures should be instituted as early as possible and repeated as may be necessary. According to the opinion of the writer, mercury and, to a less degree, the iodides are likely to

prove quite as valuable and possibly more so than salvarsan, the effects of which seem to be somewhat fleeting on the one hand, and excessive on the other, if the drug is used in full doses rather than by the fractional method.

SUMMARY

1. The discovery of *treponema pallidum*, perfected methods of demonstrating it in body tissues, the development of the Wassermann and luetin tests, and careful and extended studies based upon these, have resulted in an exact knowledge of the wide dissemination of syphilis and its enormous importance as a factor in the causation of diseases of extraordinary diversity.

2. We now know that the term "cerebrospinal syphilis" embraces a large number of diseases in which its presence was formerly only assumed or wholly unsuspected.

3. It now appears that, to an extraordinary degree, the mortality of the disease depends upon its vascular ravages, which are proven fundamental in many ailments of strikingly diverse complexion.

4. It may assume any one of the various forms of sclerosis, endarteritis, or myocardial degeneration, but presents, in most instances, in the earlier stages of the latter, certain characteristic lines of attack and modes of histologic expression.

5. The most characteristic of these is the productive mesaortitis of Francis H. Welch, extraordinarily prevalent, almost constant microscopically in a more or less developed form at autopsy in every case of proven syphilis, and the actual cause of death in 50 per cent or more of such cases.

6. This disease shows a peculiar affinity for the first portion and arch of the aorta, and tends to assume at the root of that artery a characteristic line of march which in 80 per cent of the cases results in the establishment of secondary aortic regurgitations of a peculiarly progressive and intractable type, once it reaches the stage of frank myocardial insufficiency.

7. In 20 per cent of such cases of the advanced type true aneurysm and frank angina pectoris major occur in about equal proportion.

8. The leading symptoms, aside from those of aneurysm and actual angina pectoris, are pain, dyspnea, diffuse dilatation of the aorta, and progressive crippling impairment of vascular reserve.

9. Many of the cases are wholly silent, and

the symptom complex may be blended, incomplete, or so misleading as to be most readily misinterpreted.

10. Only through recourse to more rational methods of early diagnosis, dependent upon the proper recognition and weighing of minor symptoms, subjective and objective, may these cases be detected early enough to render specific treatment properly effective.

11. The utmost importance attaches to the Wassermann test, but only when it is in the hands of an expert serologist.

12. The improper use of this test and the false reliance placed upon it must vitiate many reports, and result in errors of omission and commission, damaging to the physician and a source of humiliation and injustice to the patient.

13. Finally, a consideration of this topic emphasizes not only the importance of the individual cardiovascular luetic lesions, but also the terrible potency of syphilis as a cause of death at a period remote from the primary infection and through channels which so conceal its identity as to obscure the fact that it may yet come to be called the "Captain of the Men of Death."

DISCUSSION

DR. S. MARX WHITE (Minneapolis): Although medical men have known for a long time that there was no disease so protean in its manifestations as syphilis, yet the introduction of the biologic tests has extended our knowledge of the disease tremendously. However, as we have seen a larger and larger number of individuals, formerly not suspected of syphilis, showing the disease, we have come to realize that even these biologic tests have their limitations, and that, as in all other fields of medicine, we must depend, not alone upon the laboratory procedures, for in this field the Wassermann test cannot always tell us correctly as to the presence or absence, particularly the latter, of syphilis. In many of the obscure conditions of the heart we must think of such possible diseases as syphilis, and we have been forced often, even in the absence of positive biologic tests, to the old therapeutic test for the determination of the question.

Warthin has shown us the frequency with which the *treponema pallidum* is found in the musculature of the heart in cases which clinically were not suspected of showing syphilis at all, and that fact has awakened us to the possibility of syphilis as a cause of certain obscure cases of myocardial weakness without other definite signs of syphilis.

Dr. Greene has very properly brought out the fact that one of the most frequent and important manifestations of syphilis in the cardiovascular apparatus is mesaortitis and its consequences in the arteries of the heart wall.

In a considerable number of cases within the last two or three years in the University Hospital clinic, the therapeutic test for syphilis has been used where the

biologic tests have failed to show its presence, in cases with myocardial weakness, and there have been some rather astonishing results in the improvement of the patient with myocarditis, with or without valvular lesions, with or without mesaortitis, particularly under the administration of mercury. Dr. Greene emphasizes the particular value of mercury in this field, and my experience confirms him.

I believe that, as in the diseases of the spinal cord, especially the later lesions in the spinal cord, we will come to a somewhat different method of use of salvarsan in mesaortitis, using smaller doses rather than the larger doses, against which we have been warned and of which we have learned to be afraid. In extensive disease, at least, of the aortic wall, I recommend small doses sometimes, even less than 0.3 gm. for administration, and give it more frequently than the usual intervals.

Another point that Dr. Greene very wisely emphasized is the examination of the aortic arch with the fluoroscope and with the x-ray plate in cases in which there can be any suspicion of aortic disease. The fluoroscope and the plate, particularly the oblique examination of the chest, so that an impression can be gained of the thickness of the aortic arch, are of extreme importance, and in my own experience have, in a number of instances, led to a recognition of or to a suspicion of syphilis in those cases, because with mesaortitis a dilatation of the aortic arch is the most common sign recognizable by proper x-ray examination, and occurs often a long time before involvement of the aortic valve becomes apparent.

DR. L. G. ROWNTREE (Minneapolis): It has been emphasized that the Wassermann is of value only when made by a competent and properly trained man. Even under these conditions it may be misleading. I have seen the diagnosis of lues made on clinical grounds and abandoned on account of repeated negative Wassermann reactions; and then at autopsy I have seen a gumma which was unquestionably the cause of the patient's symptoms. I have also seen the converse,—cases in which, as the result of a positive Wassermann reaction, the clinical diagnosis was abandoned and the condition looked upon as luetic in origin. At autopsy the original diagnosis was confirmed, and lues was found elsewhere in the body. It is important to remember that a negative Wassermann done under ideal conditions does not exclude syphilis, and that a positive Wassermann does not mean that the condition present is of luetic origin. When clinically the condition suggests lues, antiluetic treatment is worth a trial. It often results in the Wassermann becoming positive. We have in the University Hospital at the present time a patient who showed three negative reactions, and under antiluetic treatment the Wassermann became positive. This positive finding means lues, but it does not necessarily mean that lues is responsible for his clinical manifestations.

DR. H. E. ROBERTSON (Minneapolis): One point mentioned by Dr. Greene deserves special emphasis, namely, the fact that in syphilitic aortitis we are dealing with a mesaortitis. This is probably due to the lodgment of the *treponemata* in the perivascular spaces of the vasa vasorum, thus invading the adventitia and outer layers of the media. When this occurs there is

an infiltration of lymphocytes and plasma cells, a proliferation of connective tissue and destruction of the muscle and elastic tissue of the artery, just as takes place in every lesion of syphilis in the body, namely, infiltration, proliferation, and necrosis. This new connective tissue possesses the usual characters of scar tissue, though in an advanced degree, and causes contraction with consequent "puckerings" of the intimal surface. These "puckered" markings are fine lines or grooves on the inner surface, running, in general, parallel to each other and longitudinally with the vessel, although often forming a more or less confused network. They are sometimes quite coarse, and at others so fine and delicate that they may easily be overlooked.

The arch of the aorta is the favorite location for them, and when seen they are absolutely diagnostic of a mesaortitis, not necessarily but usually syphilitic in origin.

Such an aorta is harder, thicker, and less elastic than normal, though the usual yellowish plaques of ordinary intimal sclerosis may be absent. Such conditions should show definite clinical signs, such as increased blood-pressure, cardiac hypertrophy, or muscular insufficiency, and marked increase in the rate after slight exertion, for it must be remembered that in this condition the functional ability of the artery is tremendously reduced.

Dr. E. L. TRONV (Duluth): We are especially indebted to Dr. Greene for his thorough discussion on hectic cardiovascular disease. Dr. Irvine hints at the undoubted widespread distribution of the disease. Realizing the well-known tendency of syphilis to attack different regions in different people, there must be a large percentage in whom we might look for arterial or myocardial changes. If we are to discover these at a time when treatment can be of tremendous benefit, we must reach out for those signs and diagnostic aids which will at least point the way. A properly controlled Wassermann test has been of inestimable value, but it must not be taken without due correlation with the subjective symptoms and objective findings. I have had an experience now often enough so that it has come to impress me greatly. It is an adaptation of the principle pointed out some three years ago by Dr. W. J. Stone, of Toledo, and concerns the determination of the so-called "heart-load." Remembering that the young adult should have a diastolic pressure of 80 and a systolic pressure of about 120, the difference between the two, or the pulse-pressure over the diastolic pressure, which becomes 40 over 80, yields a normal heart load of about 50 per cent.

Now, then, a man aged approximately 30, we will say, consults us, and complains of unusual dyspnea on slight exertion. Going up a few stairs or climbing a slight hill makes him breathe heavily. The routine examination, determination of heart outline, auscultation, etc., yields us little distinctive pathology. After climbing two flights of stairs he may have only a slight systolic murmur at the apex, but we find the diastolic pressure 65 and his systolic pressure 130 or 140. The difference in heart-load is apparent, being 100 per cent or more.

This tendency for the diastolic pressure to drop will appear even before the typical murmur of aortic insufficiency. Others will complain only of substernal pain, which of course by itself is indeterminate. However, if in addition to this we get a satisfactory history of syphilis and a four plus Wassermann it does not behoove us to quibble as to whether this is a periostitis of

the sternum or mediastinal thickening or a possible beginning mesaortitis, which it usually is, but it does behoove us to carry out intensive treatment at once, and it is astonishing how often what might appear to be a trivial complaint proves to have a true organic basis. It is only in this manner that we shall be able to head off many of the late and disastrous effects of untreated cardiovascular syphilis. Mesaortitis, dilations of the different segments of the aorta, true aneurysm, are far more common than is popularly supposed.

Dr. A. D. HIRSCHFELDER (Minneapolis): I would like particularly to express my pleasure that Dr. Greene has emphasized the value obtainable from the use of digitalis in cases of aortic insufficiency, in contrast to quite a number of writers who still retain the view that was laid down by Corrigan, in 1837, that, because there is a regurgitation into the heart during diastole, we should not prolong the diastole by slowing the heart by the administration of digitalis.

A few years ago Dr. Stewart, in the Johns Hopkins Laboratory in Baltimore, was able to record the volume of the heart and to demonstrate that when the tons of the heart muscle was good, when the heart muscle was in good condition, that even in extreme aortic insufficiency, slowing the heart down did not bring about any abnormal dilatation. Therefore it followed as a corollary that digitalis, which increases the tons of the heart muscle and tends to prevent its over-dilatation, is indicated and not contra-indicated in aortic insufficiency.

Secondly, I would like to call attention to the fact that one can very frequently obtain very pleasing therapeutic results by the simultaneous administration of nitrites along with the digitalis, or by the inhalation of amyl nitrite for the relief of the attacks of cardiac dyspnea that one finds so frequently in aortic insufficiency. It is simply a case of dilating the blood-vessels so that the blood will pass more easily toward the periphery rather than be squeezed back into the heart.

Thirdly, I would like simply to make a plea for a method in the treatment of aneurysm which has not been used very much in the Northwest, and that is wiring the aneurysm. The treatment of aneurysms by wiring and inducing clotting within the sac has been used very extensively in this country by Dr. Finney, and with a good deal of success, at least temporarily.

There are, however, two classes of aneurysms from the standpoint of this treatment. There are the aneurysmal sacs with wide mouths and those with narrow mouths. It is the narrow-mouthed aneurysms that can be completely filled by the clot, so that the blood current will no longer pass into the sac, but the stream will simply go on by it, and this kind is amenable to treatment. The width of the mouth then plays a very considerable part. The higher the blood-pressure and the more forcibly the heart is beating, the more, not only the sac, but the mouth of the sac, will be widened. And I have been able in some cases to find very decided beneficial results in the treatment of the aneurysm by prolonged postoperative medical treatment with rest, bromide, and sometimes morphine, to quiet down the patient, to lower his blood-pressure, to particularly diminish the force of each pump-stroke of the heart,

and to enable the clot to form, and to become solid before the patient was sent out of the hospital.

In fact, in one case we had a very striking example, in which during a condition of excitement, after a successful wiring and clotting within the sac, the pulsation returned, and the case looked hopeless, and then, under a good, quieting psychotherapy and some opiates, the patient was quieted down and kept so for several weeks, and during that time the pulsation disappeared and the patient was alive three years afterwards.

DR. GREENE (closing): I greatly appreciate the kind reception accorded my paper by the members of the Society and the free discussion which it has received.

References to the Wassermann test remind me of an experience of yesterday when one of my old friends, who wore a look of desperation, stated that he had submitted an important blood specimen to two laboratories, in one of which he had great confidence, in the other, one which was somewhat limited. He anticipated a positive report because of the clinical evidence, but, to his surprise, got a negative from the man he trusted and a positive from the one he doubted. He then submitted a second specimen to each in another name, with the result that an exact reversal of the findings occurred. Needless to say his confidence was greatly shaken.

In closing the discussion, I wish to emphasize again the fact that we must make earlier diagnoses of heart disease, and this we can do only by casting aside the older views and getting an appreciation of the great value and importance of subjective symptoms. In the early stages, or relatively early phases of cardio-vascular insufficiency, whatever the type, we are not dealing

necessarily with gross and easily demonstrable changes. We are dealing with an impairment of cardio-vascular reserve, which reveals itself over long periods, in many instances, only through subjective symptoms or slight and fragmentary signs. For months or years, myocardial tons alone may be affected and even if dilatation occurs, it must attain a very considerable degree before it is demonstrable as such with any certainty, even by Röntgenographic methods.

This leads one to emphasize also the great value of direct cardiac stimulation as a means of early diagnosis. I know of no more important use of digitalis than its employment for the purpose of unmasking the failing myocardial reserve by removing or ameliorating symptoms present in the given case. With this, one must combine oftentimes a short period of absolute physical rest.

Dr. Hamilton has put very forcibly the importance of arterial sufficiency, and it recalls to one's mind the dictum of one of the older physiologists who said that the arteries were merely lesser hearts. This statement is unquestionably both true and of great clinical importance.

I believe that we are now entering upon a new era in relation to diagnosis and treatment. Only recently have we begun to appreciate the availability of our numerously increased and rapidly accumulating store of knowledge to the detection of important chronic diseases in their incipency or during their early stages. That which we have found necessary and valuable in relation to tuberculosis must be extended to other ailments, and in no field are the opportunities greater than that of cardio-vascular syphilis.

REMARKS ON MILITARY PREPAREDNESS*

By J. S. WHITE, M. D.

ST. PAUL

I feel rather diffident in appearing before you to talk on the question of "military preparedness," as the announcement specified. I had hoped it was to be a talk on "medical" preparedness. There have been so many meetings, presided over by local celebrities, with so much able discussion of the question of our military preparedness, I am loathe to go into the subject with the hope of interesting you. Of course, we all know that our preparedness as a medical society must be along medical lines, for only along such lines can our special abilities be utilized for the good of the country.

In looking over the late periodical literature, especially the current medical literature, I find that it teems with meetings aiming to organize the medical profession for the special military problems that seem to be before us. There have been meetings in New York, Baltimore,

Philadelphia, Chicago, Boston, and numerous other cities where the medical side has been especially dwelt on, and some of these meetings have brought out salient facts which are summarized in several editorials of the current number of the *Journal of the American Medical Association*, of April 7. I would like to say here, and quote from an editorial "The Army Surgeon," that the idea that surgery is the one wonderful thing about the army medical service is all wrong. The amount of surgery done in actual service is quite small as compared with the other duties and functions of the Medical Department of the Army. Quoting from the editorial:

It is safe to say that the majority of physicians who are considering offering their services to the Government at this time have only a slight conception of the difference between military duties and civilian practice. The glamour of surgery has been cast over the duties of the physician in war time; but the work of the surgeon usually begins only after the duty of the

*Presented before the Minnesota Academy of Medicine, April 11, 1917.

soldier is done. The surgeon repairs the wounded man. The duties of the physician as a medical officer begin with the enlistment of the man before he is a soldier, take him from the recruiting office into the camp of mobilization, accompany him into the zone of war, select the site for the camp, keep the soldier fit for his duty as a fighting man, guard him from the devastation of infectious diseases, and prevent his incapacitation from exposure, from bad food, and from the thousand and one other conditions of army life which are more dangerous than the bullet of the enemy. There is work for the epidemiologist, for the laryngologist, for the dentist, and for the diagnostician, as well as for the internist and the surgeon. The surgeon by no means comes first. If any fact has become evident during the last three years it is that preventive medicine is the most important factor in keeping an army "fit," and, therefore, in the final determination as to which side shall be the victor.

Now, the question arises, how can we best prepare ourselves for meeting the present emergency? I understand the immediate demand is for thirty-five hundred additional medical men, and, if we organize the force of a million men in addition to the seven hundred thousand already contemplated, we shall need possibly seven to ten thousand more medical men; twenty-five thousand more,—Major Noble says.

Quoting from Major Noble's article in the *Southern Medical Journal*, of February, 1917:

The strength of the Reserve Corps is distributed as follows:

On active duty	369
Inactive	1,657

2,026

In addition, 657 applicants have been examined and recommended for commission, making a total of 2,683.

This is a pitifully small number for the one hundred thousand physicians in the United States. What number is required? Twenty-five thousand. Why such a large number? Because in past wars armies have been recruited by hundred thousands, whereas in wars of today armies are recruited by millions. Statistics apparently reliable state that the casualties in the present European War have been above 23,000,000 of men, and this for only two years of war. One country alone maintains hospitals with more than 600,000 beds for its sick and wounded.

In the field, according to tables of organization, five medical officers are required for each 1,000 of troops. This does not take into consideration the medical officers necessary for the lines of communication, the base, and the service in home territory.

The first thing we should bear in mind is to be physically fit, to know how to take care of one's self in bivouac, to be able to ride horseback, to understand modern sanitation, modern methods of immunization, and have a thorough knowledge of the physical requirements for enlistment. Of course, there is a great deal of special knowledge necessary in the career of

an army surgeon peculiar to the calling, namely, methods of procedure, the multitudinous paper work, and the keeping of records. I have seen many good medical men, surgeons and internists, become very much disgusted with the army, due to the fact that they knew nothing about how to get medical supplies, how to keep track of a sick or injured man, and, when they were taken to task, become very much annoyed and disgusted to think their services were not appreciated, when, as a matter of fact, it is very important to keep an accurate record of every man's illness and injury, for, sooner or later, that same man's claim will come before the pension board, and on the records made at that time largely depends what shall be done with the man's claim. Shall he be pensioned and taken care of by the Government, or shall his claim be refused? It is the duty of the medical man to protect both parties to the contract, and it is very important that he be just and fair. The Government is very lenient in matters of this kind and aims to do the right thing, and it refuses these claims only when it is very evident that the illness or injury did not occur in line of duty.

During the Spanish-American war we had a horrible epidemic of typhoid fever due to the fact that the whole profession was inexperienced in large sanitation problems, and we did not understand many of the things we now do. At the present time a larger number of men have been mobilized and have been inoculated with the typhoid prophylactic, and consequently the percentage of morbidity is very low, and the percentage of mortality among those taken sick (inoculated) is almost *nil*.

Again quoting from Major Noble's article:

Lack of a trained sanitary service is one of the greatest of handicaps; for an army with an untrained sanitary personnel must guard and care for its sick and wounded at the front, instead of being relieved of these impedimenta by prompt evacuation to the base. This failure means interference with that rapidity of movement of an army so essential to success; and, in addition, there are the loss of lives that should have been saved and the suffering that should have been prevented. Lack of medical preparedness means military absenteeism. This form of absenteeism in the Federal Army during the Civil War amounted to over 600,000 men—men who were maintained at a heavy cost to the Government, from whom the Government received no return, and the survivors of whom are today pensioners on the Government. It means criticism at home, discontent of the soldiers, and, as a consequence, a loss of morale, a burden under which no army can hope to succeed in war.

Some of you were in the Spanish-American War

and remember the concentration camps. I wish to bring to your attention but one example of the lack of preparedness in that war and to contrast it with one example of preparedness.

For four months in 1898 a volunteer division was camped at Jacksonville, Fla. This division, with a mean strength of 10,759 men, had 1,729 cases of positive typhoid fever and 964 cases of fever, probably typhoid, with 248 deaths from this one disease and 281 deaths from all other illness, a total of 529 deaths from disease in four months in a division of less than 11,000 men; an annual death-rate of 147.5 per 1,000, and for diseases other than typhoid the death-rate was 78.3 per 1,000 per annum. Contrast this with the division of the Regular Army encamped in 1911 for the same length of time at San Antonio, Texas. This division, with a mean strength of 12,801 men, had one mild case of typhoid fever and but eleven deaths from all other illness,—a death-rate of 2.58 per 1,000 per annum, or a rate of one-thirtieth of the death-rate at the Jacksonville camp for diseases other than typhoid. These camps were in the same latitude for the same length of time, and each was supplied with artesian water. I wish by this comparison to illustrate one point, and that is that in Texas the medical officers were trained officers.

One of the principal problems connected with the care of large bodies of troops so as to keep them fit is to protect all food and the water supply. This is accomplished by efficient sanitation, by the proper disposal of excreta and garbage. This has been solved in a number of ways, but the experience on the Mexican border, I think, has settled upon a standard plan for the care of this material, namely, destruction by incineration. The water in permanent camps is usually analyzed and subjected to bacteriological investigation before it is furnished to the camp. In the field it is necessary to sterilize the water by boiling it, and the quartermaster's department and, I think, the medical department, *both* furnish sterilizers for this purpose; and all the men in the different commands are forbidden to drink any but boiled water, or sterilized water. It becomes the duty of the medical man to be on the alert as to the possibility of a command being rendered unfit from an impure water supply. Years ago, before the line officers thoroughly understood the question of sanitation, it was very hard for the medical man to impress on the line officer the necessity for care of food and water for the troops. Now it is very different. The medical man is a very important man in the command, and his opinion is very much respected and acted on.

Quoting again from Major Noble's article above mentioned:

Avoid the mistakes of the past; create a medical preparedness that means the application of efficiency to the

conservation of health and life; and co-ordinate the life-saving with the life-destroying branches of the service. By so doing we can avoid the humiliating condition of the past: avoid failure; avoid a forced abandonment of a campaign, as was the case in the present war where from one small area, from April 25 to October 20, 1915, only 175 days, one country removed more than 78,000 sick, and in the succeeding twenty days removed 18,000 additional sick from that one area, and later withdrew entirely from the field of operation.

One of the scourges of army camps, probably the greatest, is venereal disease. This problem confronts the medical man. If he were left alone it could be solved, but there are so many influences that go to prevent the solution of this problem that it is an ever-present menace to the efficiency of the army. The history of the present colossal catastrophe in Europe bears out the statement that of all the medical problems confronting the forces in the field, that of the proper protection against venereal disease is one of the largest. They have enacted laws in Australia, England, and Germany to protect the population at home, consisting of compulsory treatment and registration—they are taking care of the results of laxness. No people seem to be able to face this problem. They seem to ignore it and aim to do something after the damage has been done; and from what the different authorities have to say about conditions in the different countries, the damage has been very considerable. Many attempts have been made to solve this problem in the navy and in the army during peace, but many good people get the wrong angle and attack the preventive measures as being improper and encouraging vice.

Major Noble quotes Mr. Breckenridge, late Assistant Secretary of War, who, in speaking of the army said: "The Medical Corps of an army is the great conserving agency of a destructive organization. To wage war successfully, the greatest amount of destruction must be visited upon the armed forces of the enemy. For this end is required the utmost conservation of health, energies, and life of the army, and to this end the highly trained and specialized medical corps is absolutely essential."

An army's duty is to destroy the armed forces of the enemy. The extent and thoroughness of this destruction in the European War was illustrated by Herr Bernstein, of the German Reichstag, who recently stated in a speech before that body: "The number of killed in this war is estimated at 4,500,000; the number of permanently crippled is estimated at 8,300,000;

the number of wounded is estimated at 11,000,000," a total of 23,800,000.

The accuracy of these figures is not vouched for. Personally, I believe these estimates are high; but we do know that the losses are beyond the grasp of the human mind, and the end is not in sight. We know that the medical profession of Europe is taxed beyond its utmost limit; that there are not enough medical men for both the civil population and the armies in the countries now at war; and that the services of volunteers from the United States have been eagerly accepted.

Of all the countries of the world, the United States is the only one that has a medical profession sufficient in number to serve, in time of war, both the civil population and the army. But the profession is unorganized, and a war in the near future with a first class power would result in a waste of life that organization now would prevent. Had the ratio of the profession to the population of the countries now at war equalled that of the United States, many of the estimated 4,500,000 dead would have been saved; many of the 8,300,000 cripples would have been made whole.

The thing for everyone here who feels that

he wants to do something in the emergency, is to join the Medical Reserve Corps, and his services are then at the disposal of the War Department. I have here a circular of information and an application blank which I am glad to say can be had for the mere asking from the Surgeon-General of the Army. In an editorial in the *Journal of the American Medical Association*, it is stated that those desiring to offer their services to either the Navy or the Army should write to the Surgeon-General of the Navy or Army, Washington, D. C., stating their age, when and where graduated, what practice they are engaged in, what specialty, if any, and when they would respond to the call. This information should be accompanied with two letters of recommendation from physicians of good standing in the medical profession. This will save time.

In conclusion, I would like to answer the question, "How can we best be prepared in the emergency?"

1. Be physically fit.
2. Learn to take care of yourself in bivouac.
3. Learn to ride horseback.
4. Join the Medical Reserve Corps.

OBSERVATIONS AND EXPERIENCES OF THE ALLEN TREATMENT*

BY CHARLES P. ROBBINS, M. D.

WINONA, MINNESOTA

I shall present to you today my experiences and impressions received during the treatment of diabetics by the Allen method. They comprise four cases over which I had absolute control.

CASE I.—A. D., aged 45, male, Norwegian; a farmer.

Family history: He showed that his mother, father and brothers died of tuberculosis. He weighed 176 lbs., and his height was 6 ft. 1 in; gave a negative venereal history.

Habits: drinks coffee and uses salt excessively.

Present history: he was cognizant of his diabetes of the past twelve years, and complained of backache, pain down the legs, and across the abdomen, and pain in the stomach after meals.

Physical examination: mouth, tonsils, and nasal cavities, negative; neck, enlargement of the thyroid; lungs, infiltration of the right apex; heart, hemic murmurs; abdomen, liver slightly enlarged, sagging of the transverse colon; pelvic cavity, small hemorrhoids and

varicocele; blood, reds, 4,000,000, whites, 8,000; hemoglobin, 90 per cent; urine, sugar 5 per cent with acetone and ammonia 2.9 gm.

I gave him 300 c.c. of Fisher's solution, and placed him on the Allen treatment. At the end of five days he was sugar free.

The symptoms complained of most during this period, were a weakness and general tired feeling. The patient lost about three pounds, and after twenty-four hours urine was free from sugar. He was started on the tolerance-testing of proteins, carbohydrates, and fats.

Beginning with 7 grams of protein, 6 grams of fat, and 10 grams of carbohydrate, the ratio was gradually raised until at the end of the twenty-fifth day he was taking 70 grams of protein, 200 grams of fat, and 50 grams of carbohydrate. He reported each day to have his urine tested, and kept sugar-free for several weeks. Then two months elapsed, when he returned to be checked up, and found he had about 0.5 per cent of sugar, but he admitted that 50 grams of bread were not enough, and he had eaten four times that amount and felt fine, with the exception of a little headache occasionally.

He was given the same course of treatment as before

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

with the exception of raising his tolerance-testing more rapidly and finally instructed as to the importance of sticking to his diet.

CASE 2.—Mrs. M. J., aged 40; height, 5 ft. 6 in., weight, 165 lbs.

Past history, negative. Family history, negative.

Physical examination: nose and mouth, negative; tonsils, ulcerated, tags; neck, enlarged by goiter, cervical glands enlarged on left side; lungs, infiltration of left apex; heart, hemic murmurs; abdomen, negative; blood-pressure, 140-100; blood, reds 4,600,000, whites 8,500; hemoglobin, 90 per cent. Pelvic cavity: lacerated cervix, retroflexed uterus, hemorrhoids. Left leg from the knee down, edematous, with immense bulke. Urine, sugar 5 per cent and acidosis.

I gave her 500 c.c. of Fisher's solution and placed her on the Allen treatment. In three days she was sugar free, and the swelling of the leg commenced to diminish.

She was placed on a tolerance-testing of food, and in three weeks was taking 50 grams of carbohydrates, 70 grams of protein, and 150 grams fats, and all symptoms of localized edema were disappearing in the leg.

CASE 3.—C. K., aged 60, male; height, 5 ft. 8 in.; weight, 143 lbs., a farmer.

Past history, negative. Family history, negative.

Habits, great user of salt.

Present history: complained of headache, pain in leg, backache, pain in abdomen, dizziness, gas on the stomach, heartburn, cold hands and feet.

Physical examination: nose, mouth, throat, and neck, negative; lungs, chronic bronchitis; heart, aortic regurgitation; pelvic cavity, enlarged prostate; blood-pressure 180-100; pulse, 86; sclerosis of the arteries; blood, reds 4,500,000, whites 9,000; hemoglobin, 90 per cent; urine, sugar 2 per cent and trace of albumin.

He was placed on the Allen treatment, and was sugar free in three days. Pains disappeared, but the frequent urinations continued because of the enlarged prostate.

CASE 4.—J. L., female, aged 36; height, 5 ft. 7 in.; weight, 170 lbs.

Family history, negative.

Present history: complains of severe itching, frequent and great urination; feels perfectly well except for the itching.

Physical examination: mouth, negative; enlarged left tonsil; nasal cavity, negative; neck, palpable goiter; chest, negative; abdomen, negative; pelvic cavity, negative; blood, reds 5,000,000, whites 9,000; hemoglobin, 100 per cent; abdomen, negative; urine, sugar 5 per cent, no acidosis.

She was placed on the Allen treatment, and in three days was sugar free, and in eighteen days received 50 grams of carbohydrate, 50 grams of proteins, and 200 grams of fat.

These patients state they feel better than they have felt for years, although they all lose weight. The pains in the muscles, their headaches, and backaches, and the itchings are all relieved, but some of them complain of weakness, which is relieved by increasing the diet.

The observations and experiences gained from these few cases present several interesting prob-

lems. The first stage is the prolonged fasting; and it is to be determined whether it is advisable to apply this treatment to all diabetics of long standing. Many patients of advanced years with diabetes, having marked sclerotic changes in the cardiovascular and renal tissues continue a very active life with 1 to 2 per cent of sugar. When made sugar-free by the Allen treatment it left them in a weakened condition, whereas before when passing sugar they had no uncomfortable symptoms. To me it is an open question whether one should insist on keeping this class of patients sugar-free.

Another problem arises in the extremely lean diabetics and severe cases where it takes several days to make them sugar-free. The complications arising in this fasting stage will not disappear unless the patient is returned to carbohydrates.

Another problem we must consider is the effect in these under-weight patients on the nervous system. We must remember that a patient may look good and yet not feel good when under weight, although he cannot explain where he feels bad, while the urine remains sugar-free; whereas, increasing the carbohydrates returns these patients to a happy frame of mind, but gives them a small percentage of sugar in the urine.

There is another class of chronic diabetics who are over weight, but can be reduced in weight when the Allen treatment is applied and remain perfectly well and contented. Again, we must remember that a thing to watch in the care of these cases by the Allen treatment is the acidosis, which appears very quickly. A sudden loss of appetite, intense headache, and vomiting should put us on our guard.

These diabetics will remain well by the Allen method and feel perfectly well while continuing it. I believe they should go on a restricted diet one day out of each week to still further spare the already diminished function which controls carbohydrate metabolism. Another thought, I believe alkalies should be given for acidosis only, but without the acidosis no alkali should be given with the usual test. I believe in studying each patient's diet, and arranging the Allen treatment according to the way the man lives. I do not believe in changing a patient's habits of living as to arising and retiring, and the time spent at meals and the time spent out doors.

The real question as to the advantages of this treatment must depend upon the outcome of such

patients who are on the Allen treatment over a long period of years.

The second stage (tolerance-testing) presents several interesting questions. We know that the ratio between the different kinds of foods in no two people in health is alike, just as no two faces are alike. We have the standard diet of health to go by, but in tolerance-testing we must individualize our cases. In one case it may take two weeks to bring the caloric value to normal for that patient's weight and remain sugar-free, while in another case it may take three weeks.

Another question arises, Should we raise the protein ratio to the normal or would it be better to go a little below the normal? Another question is as to the rapid raising of the fats, yet we know if we raise them too rapidly we produce acidosis. This comes quickly, and should be watched not only by testing the urine, but by the alveolar air and the hydrogen ion concentration of the blood. Lastly, regarding the stationary diet or the diet that keeps a patient sugar-free but underfed. We know that the capacity of the stomach to metabolize a meal is from 400 to 600 grams in a female and 600 to 800 grams in a male. Now, in this stationary diet can we arrange the foods so that the patient will have a normal volume to chymify the foods without destroying the ratio of carbohydrates, fats, and protein and without overtaxing the stomach, with too much cellulose?

The last point I wish to bring out is the necessity of furnishing these patients with a scale and make them weigh their food.

DISCUSSION

DR. A. H. BEARD (Minneapolis): I was very fortunate in being able to care for these patients while in Boston. I saw the old treatment with the rather poor results, and know how optimistic Dr. Joslin became under the Allen treatment. Under the old treatment 87 per cent of the patients in the first year of the disease died in acidosis. The results after fifteen months' treatment decreased the mortality about 50 per cent.

There are a few principles that should be observed in the Allen treatment. The diet should be cut down gradually, not attempting to jump from a high food-intake to starvation in twenty-four hours. The fats should be eliminated first, in order to remove the source of "acidosis bodies" in the blood. After the patient is sugar-free the diet should not be given with too high an intake of fat. This is not done to decrease the acidosis, but in order to keep the patient on a fixed diet. If the fats are too high the diet becomes repulsive and nauseating to the patient. We usually do not give over 150 gms. daily.

The new routine has taught us a great deal in after-

care of these cases. The Allen treatment is only half completed when the glycosuria has disappeared. The patient should be given didactic lectures. These lectures include talks on urine examinations, caloric values of food, diets, and a number of small but important precautions. Patients are taught to test the urine with qualitative Benedict's solution, using the urine passed on rising in the morning. Most of the patients learn to make up well-balanced diets with the amount of fat, protein, and carbohydrates allowed after the sugar-tolerance has been established. The diet for the day depends on the result of the urine examination that morning.

One or two interesting symptoms have developed under this treatment. There is apparently little danger in the starvation treatment even though edema develops. It usually worries the patient. Dr. Joslin states that he has never seen a patient who developed edema during the starvation period pass into coma.

A few cases are apt to develop bradycardia during starvation. Some of the cases at the Massachusetts General Hospital showed a bradycardia of forty. However, the cardiac tracings showed only a delayed conductivity. At present its relationship to prognosis is not known.

There also seems to be some relationship between acidosis and ocular tension: the tension decreases as the acidosis appears.

Dr. Joslin has slightly modified Allen's original ideas. He does not use sodium bicarbonate except in cases of marked acidosis and coma. He also has given up the use of alcohol. A great number of patients, although alcoholics, do not care for it. They complain of headache and a feeling of intoxication.

DR. J. C. BOEHM (St. Cloud): One important point has been omitted, and that is the age when diabetes starts. My personal experience has been that you take it in young people, up to twelve or sixteen years of age, if you find a case there, that case will not last over two years; I do not care what treatment it receives.

Let us consider patients who are fifty or past when the diabetes starts in. I had an old woman who had lived in St. Cloud for twenty years. She had diabetes, and then she did not die of diabetes, but died of pneumonia. These patients get free of sugar of their own accord, in spite of the fact that they do not observe any of the rules you give them about their diet. My own personal experience has been that the older a person is when diabetes starts the longer he will live without any treatment.

DR. ROBBINS (closing): One thing that was brought out in this interesting discussion was the question of anasarca from these things which Dr. Joslin did not think caused any great amount of harm. I remember, distinctly, of having one case that developed a very pronounced anasarca or general dropsy, which nothing relieved until he went back onto carbohydrates. I believe there are some cases of diabetes—those cases of cardiovascular and renal changes—where the patients feel very comfortable with a small percentage of sugar, but when you make them sugar-free, they come and complain to you that they do not feel good and cannot explain why it is so, but by returning them to a small carbohydrate diet they regain a happy frame of mind. I believe that class of patients should not be kept sugar-free.

SECONDARY ANEMIAS OF DOUBTFUL CAUSATION*

BY T. R. MARTIN, M. D.

DULUTH, MINNESOTA

Especial interest has been shown in the study of anemias since splenectomy was advised in certain types of pernicious anemia, more particularly since the work of Schneider has given us means for selecting proper cases. The proportion of patients consulting the physician in whom the chief finding is a rather severe anemia, is surprisingly large. The etiological factor in the secondary type is of paramount importance in instituting a treatment that will give a relief of symptoms.

It is the purpose of this paper to give an analysis of the profound anemias under my observation during the past two and one-half years. In so doing, I have chosen only those cases in which the essential finding at the preliminary examination was a profound anemia and in which the symptoms did not give a clue as to the causation. It necessarily follows that many cases of secondary anemia, in which the pathological causation was quite apparent, will be omitted from this classification. Most of the forty cases of profound anemia which I am to report upon have been given careful study.

Eleven of these cases are classified under "pernicious anemia," the diagnosis on seven of them being made alone upon the clinical course of the disease and the blood-picture. In four cases this diagnosis was substantiated by examination of the duodenal contents according to the Schneider method.

This paper is not to deal intensively with a study of these cases of pernicious anemia. It may be added, briefly, however, that eight of these patients have had the spleen removed. Five of them made a rapid recovery, and approximated a normal blood-count within a period of about six weeks. Four of these five have since relapsed. One has maintained a better state of health than he had prior to the operation, but presents the static results of the cord lesion which partially incapacitates him. There is one death in this series following operation, due to a post-operative pneumonia. Two patients have shown little change in the blood-picture, although general conditions improved somewhat. It is only fair to add that the duodenal contents were not examined in either of these

two cases, and they were presumably unfavorable cases for splenectomy.

The striking tendency for pernicious anemia to exhibit remissions is classically exemplified in one man who ten months ago was too sick even to pass the duodenal tube. Under no treatment whatever, except good hygienic surroundings and out-of-door, he is again feeling fine, and the hemoglobin and red-blood count are high, although the tendency to retain perverted forms of red cells is strikingly seen. This man has had at least four remissions over a period of six years. These points are brought out chiefly to emphasize the features inherent and typical of true, so-called pernicious anemia.

While popularly supposed that chlorosis is a common disease, it would appear that if we subscribe to the usual clinical demands before making this diagnosis and if we consider fully the question of age, the sex, and the history, relatively few cases will prove to be true chlorosis. Three of these cases, however, subscribe fully to all these demands, and are so classified.

The remaining twenty-five cases have been classified as secondary anemias, and furnish the main subject matter of this paper. The complaint of the patient has in no instance pointed to the source of the trouble; the determination, therefore, of the final diagnosis, has often been difficult as well as interesting. It would appear better to attempt to classify these cases somewhat according to the diagnostic means available for differentiation. There are many features in this classification, of course, that are omitted, which might well have been studied. Of greatest interest would appear to be the general age and sex of the patients, the length of time they were under observation, the character of the pathology that could be demonstrated with the various tests, and the therapeutic results. The large number that showed a positive Wassermann, indicating at least some association with syphilis, merits special study and has special significance.

CASE 12.—A male, aged 35; hemoglobin 45; red count 3,500,000. Chief complaint, a gradually increasing weakness and inability to perform his work, some pain in the lumbar region.

Duodenal contents: bilirubin, +; urobilin, 100; urobilinogen, none; and blood present by the guaiac test. Stool examinations on several occasions show oc-

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

cult blood. Fluoroscopy of the gastro-intestinal tract: stomach empty at the end of six hours, persistent infusoria at the greater curvature, no defects in the lesser curvature. Probable diagnosis of gastric ulcer was made.

With rest and suitable diet patient made a complete recovery, the blood-picture gradually becoming normal.

CASES 13 and 14.—These cases are similar in nearly every respect, the chief complaint being that of gradually increasing weakness. Hemoglobin, 45, red count 2,400,000; index about 1; a few nucleated reds; no poikilocytosis. Duodenal contents: bilirubin +; urobilin, 400; urobilinogen, none; occult blood by the guaiac test. Stool examination shows occult blood. Fluoroscopically, the stomach shows a small defect at the greater curvature of the pylorus.

Diagnosis, confirmed at operation, carcinoma.

Both of these patients had complained for a period of one year and had been treated assiduously for anemia. The symptoms and blood-picture might warrant that procedure.

CASES 15 and 16.—In these cases, one a female aged 27 and the other a male aged 32, the symptoms and findings are essentially alike: excessive weakness and shortness of breath; hemoglobin 40, red count 1,300,000, index, +1, nucleated reds, some poikilocytosis, and no blood in the stool. Segments of *dibothriocephalus* were found in each instance. Prompt recovery took place after the removal of the worms.

CASE 17.—Similar to two preceding cases, but occurring in a child of eleven years.

CASES 18 and 19.—These cases were similar in findings (one a female aged 35, and the other a male, aged 37). Hemoglobin 40; red count 3,700,000. Chief symptoms: a weakness and shortness of breath; stools, negative as to blood and parasites; systolic and diastolic blood pressures markedly increased; albumin, a trace; no casts found; phthalein output, markedly diminished.

Diagnosis, chronic interstitial nephritis.

CASE 20.—A female, aged 21. Hemoglobin 50, red count 3,700,000. She was first seen in February, 1915. Chief complaint, weakness and shortness of breath. The stools showed occult blood, no parasites. The x-ray shows persistent infusoria of the greater curvature of the stomach.

Diagnosis, gastric ulcer.

CASE 21.—This is an extremely interesting patient. A female, aged 25; hemoglobin 20, red count 800,000, nucleated reds, and poikilocytosis. The patient was practically moribund at the time seen. Obtained a history of three similar previous attacks during the past three years.

Clinical diagnosis, pernicious anemia. Duodenal contents: bilirubin, +; urobilin, 600; urobilinogen, none.

Diagnosis, pernicious anemia (?). Examination of stools, negative as to parasites and occult blood. Etiology of condition still a question.

CASE 22.—Male, aged 55. Hemoglobin 35, red count 1,800,000, an occasional nucleated red, no poikilocytosis. Gradually increasing weakness for six months. Duodenal contents: bilirubin, 1+, urobilin, 1,200; urobilinogen, none; guaiac test, negative; stools, negative as to parasites and blood. Patient under observation only two weeks.

Diagnosis, in doubt.

CASE 23.—A female, aged 13, first seen in January, 1916. Hemoglobin 35, red count 1,600,000, a few nucleated reds, no poikilocytosis. Chief complaint, weakness. Examination of the stools and gastro-intestinal tract, negative. Diagnosis not made.

It is interesting to note that after transfusion of 60 c.c. of blood there was a prompt improvement in the general well-being of the patient, as well as of the blood. This improvement has lasted now over a period of one month.

CASES 24 and 25.—The two cases represent anemias secondary in type with a relatively low hemoglobin index, in which the routine examination, including a Wassermann, did not reveal any causation.

The remaining cases of secondary anemia, Nos. 30 to 40, inclusive, representing 25 per cent of the cases here presented, are those in which a 4+ Wassermann has been repeatedly obtained.

CASE 30.—A female, aged 35. First seen in October, 1914. Hemoglobin 50, red count 3,500,000, no nucleated reds. Chief complaint, weakness and inability to climb stairs. Examination of the stool for blood and parasites, negative. Duodenal contents not examined. Wassermann repeatedly 4+.

Treatment, salvarsan. September 14, hemoglobin 65, red count 4,000,000.

Diagnosis, lues.

Slight improvement.

CASE 31.—A female, aged 39. First seen March, 1916. Hemoglobin 45, red count 3,500,000. Chief complaint, shortness of breath. Duration of symptoms, three years. Three examinations of the stool, negative for blood and parasites. X-ray of the gastro-intestinal tract, negative.

Wassermann repeatedly 4+. Treatment, hydrargyrous injections and arsenic. September, 1916, hemoglobin 80, red count 4,000,000.

Diagnosis, lues.

Marked improvement.

CASE 32.—A female, aged 29. First seen in March, 1916. Hemoglobin 45, red count 3,500,000. Chief complaint, weakness. Patient states that she has suffered from anemia for five years. Has taken iron ad libitum with no improvement. Two examinations of the stools for blood and parasites, negative. Wassermann, 4+ repeatedly. Duodenal contents: bilirubin, +; urobilin, 400; urobilinogen, none. Treatment, hydrargyrous injections. July 16, hemoglobin 85, red count 4,500,000.

Diagnosis, lues.

Improvement marked.

CASE 33.—A female, aged 35. First seen December, 1914. Hemoglobin 50, red count 3,800,000. Chief complaint, weakness and pains in the legs. Examination of the stool for blood and parasites, negative. X-ray examination of the gastro-intestinal tract, negative. Wassermann 4+ repeatedly. Duodenal contents not examined. Intravenous injections of salvarsan. May, 1915, hemoglobin 80, red count 4,500,000. Improved markedly.

CASE 34.—A female, aged 43. First seen in April, 1916. Hemoglobin 45, red count 3,700,000. Chief complaint, weakness and shortness of breath. Examination of stools, negative as to blood and parasites. X-ray examination of the gastro-intestinal tract, negative.

Wassermann reaction, 4+ repeatedly. Duodenal contents not examined. Treatment: hydrarguent injections and pills containing iron, arsenic, and mercury.

Later hemoglobin 65, red count 4,000,000.

Diagnosis, lues.

Moderate improvement.

CASE 35.—A female, aged 30. First seen in December, 1914. Hemoglobin 50, red count 3,500,000. Chief complaint, weakness and miscarriages. Examination of stool for blood and parasites, negative. Gastro-intestinal tract not examined. Wassermann, 4+ repeatedly. Treatment, hydrarguent and salvarsan. July, 1915, hemoglobin 70, red count 4,000,000. Patient had symptoms three years.

Diagnosis, lues.

Moderate improvement.

CASE 36.—A female, aged 37. Hemoglobin 45, red count 3,500,000. Chief complaint, weakness and precordial pain. Examination of the stool for blood and parasites, negative. Wassermann, 4+ repeatedly. Duodenal contents not examined.

Diagnosis, lues.

Treatment just started.

CASE 37.—A female, aged 31. First seen April, 1915. Hemoglobin 45, red count 3,600,000. Chief complaint, weakness and pain in the limbs. Examination of stools for blood and parasites, negative. Wassermann, 4+ repeatedly. Treatment, hydrarguent injections and salvarsan. October, 1915, hemoglobin 85, red count 4,500,000. Duration of symptoms, two years.

Diagnosis, lues.

Marked improvement.

CASE 38.—A female, aged 36. First seen October, 1915. Hemoglobin 40, red count 3,200,000. Complaint, recurrent attacks of weakness and shortness of breath. Wassermann, 4+ repeatedly. Patient lost track of; no further comments made.

CASE 39.—A female, aged 30. Seen first June, 1916. Hemoglobin 40, red count 3,300,000. Chief complaint, weakness of one year's duration. Duodenal contents bilirubin, 1+; urobilin, 600; urobilinogen, none. Gastro-intestinal tract, negative. Treatment, hydrarguent by mouth. September, 1916, hemoglobin 60, red count 3,800,000.

Diagnosis, lues.

Marked improvement.

CASE 40.—A female, aged 30. Hemoglobin 45, red count 3,500,000. Chief complaint, weakness and pain in the right side. Examination of the stools for blood and parasites, negative. Wassermann, 4+ repeatedly. Treatment, hydrarguent injections.

Diagnosis, lues.

Moderate improvement.

Of the twenty-five cases of severe secondary anemias, four were bleeders from the gastro-intestinal tract, two of them being malignant, and none of them giving gastro-intestinal symptoms. Too much emphasis cannot be laid upon the fact that in a certain small percentage of cases, lesions of the gastro-intestinal tract, either benign or malignant, do not give symptoms sug-

gesting that the gastro-intestinal tract is diseased. Three cases giving a blood-picture of pernicious anemia showed segments of the dibothriocephalus in the stool. In two cases a diagnosis of probable pernicious anemia was made from the history and the blood-picture, the examination of the gastro-intestinal tract being negative. The duodenal contents in both of these cases did not show a pleiochromia. One of these patients has since died in the fourth relapse. In two cases, with negative urine findings, the diagnosis of chronic interstitial nephritis was made upon the blood-pressure and the phenolphthalein output. In three cases a careful examination did not reveal causation of the anemia. Eleven of the twenty-five cases showed repeatedly a 4+ Wassermann reaction, and careful examination did not reveal any other cause for the anemia. This would lead one to believe that profound anemias are often associated with lues.

In this list of cases with positive Wassermanns there are certain features that should be emphasized, namely:

1. The hemoglobin index has been relatively low.

2. The patients have all been females between the ages of 30 and 43.

3. There has been no particular change in the red blood cells, and no tendency to nucleation, to polychromatophilia, or to any considerable reduction in their numbers. In fact, there is nothing that would tend to confuse these cases with those of pernicious anemia. On the contrary, one might even be more apt to confuse them with chlorosis. However, the fact that these patients enjoyed good health during the years of adolescence would practically rule out chlorosis.

4. All of the patients under observation for a period exceeding two months showed considerable improvement in the blood-picture following antiluetic treatment.

5. The duodenal contents in the four cases examined showed rather normal findings.

The question of the pathology associated with these anemias showing a 4+ Wassermann reaction is indeterminate. From a study of our cases we can definitely state that the anemia has not been of the splenic type, evidenced by a pleiochromia in the duodenal contents. In none of my cases was the spleen clinically enlarged, and it is likely that the syphilitic splenomegalia can be definitely ruled out. Could it be an in-

stance of syphilitic involvement in the bone-marrow? We already have the classical evidence that syphilis affects the periosteum and often the bone itself. Against this contention is the fact that most of these cases showed rather normal-looking red-blood cells and the hemoglobin usually a strong—1 index. Is it not more likely that the luetic toxemia acts on general organisms including the blood, very much as lead poison acts?

DISCUSSION

Dr. E. L. GARDNER (Minneapolis): Dr. Martin's very interesting paper opens up a field for unlimited discussion and more or less speculation. I refer especially to the value of the estimation of pigments and the study of the so-called pleiochromia in certain types of anemia. I think we can definitely say that the study of the pigments in the duodenal contents or stools, and to a less degree in the urine, gives us much valuable information concerning blood-destruction and, to a minor degree, liver-function.

In any study of the duodenal contents it must be remembered that we have a variable dilution of the bile by the saliva and the gastro-intestinal juices. We have, too, that ever variable capacity of the liver for producing, storing, and excreting bile-pigments. Where shall we draw the line between normal and disturbed liver-function? We have to be very careful in drawing conclusions from any estimation of pigment-formation; only unquestionable changes in the amount of pigments can give us any valuable data.

In our clinic at the City Hospital and in some private cases we have studies of about seventy-five patients, most of whom had more or less anemia. These few cases in some instances have been examined several times. The number is not enough from which to draw any definite conclusions, but it leads us to some results which we may have to modify when a thousand or more cases have been studied.

The bilirubin is what gives the normal color to the bile, usually a light-amber shade. Generally there are traces of urobilin in the bile contents, that is up to five or six hundred dilutions (by Dr. Schneider's dilution method). In increased blood-destruction (malaria, hemolytic icterus, idiopathic pernicious anemia) the bile may be chocolate-brown or almost black because of increased elimination of blood-derived pigments. In liver-insufficiency, such as certain types of cirrhosis, in passive congestion, hemochromatosis, etc., they also may be greatly increased.

Dr. JOHN SCHNEIDER (Minneapolis): I want to speak on just one aspect of this paper. In a general way I might say that the work that is being done in the Duluth clinic is excellent, particularly the careful following out of the serological tests. The striking thing to me is the very low series of possible chlorosis. After having spent several years with *pernicious*, I thought it might be interesting to learn a little more about chlorosis.

It was this idea which moved me to take up the work in the out-patient department, where those cases would naturally present themselves. After fourteen months of out-patient work, I have failed to find a case of

chlorosis. Possibly I do not know chlorosis. Wilhelm Turk tried to teach me, but I have since sometimes expected to be able to communicate to him that I believe I do not know chlorosis. We have had a fair series of cases which upon pure acceptance of the blood-findings might be so classed, but as we follow these cases through we have been able to bring them under practically three other heads,—incipient phthisis, duodenal or gastric ulcer, and nephritis.

I do not know whether I shall ever be able to find one that might be studied as a pure primary chlorosis.

Dr. G. D. HEAD (Minneapolis): I would like to say a word, in connection with Dr. Martin's paper, with relation to the treatment of pernicious anemia. I think it is a very good thing for us as medical men not to forget the natural history of disease. Go back over the history of therapeutics as it has been written in the last century in our profession, and it is something of which we might all well be ashamed. As scientific men we have failed to apply the ordinary principles of evidence in the conclusions at which we have arrived with relation to the value of this or that remedy in the cure of disease.

There is one thing which is known about pernicious anemia. I am speaking now of the Hunterian form, the form that we speak of and know as progressive pernicious anemia; and that is, that it is a disease of exacerbations and remissions. I presume in my experience I have careful notes of between fifty and seventy-five cases of progressive pernicious anemia, classed, as near as one can, according to our standards of blood and clinical study. Of that number I can remember a good many patients, a considerable percentage of them, that have lived over three years. I have one patient still living of over five years duration.

Dr. Cabot, in one of his interesting studies, gives us the records of some patients living as long as ten years. Now, with this evidence before us, it is quite important for us to remember these facts in connection with the treatment of pernicious anemia now being so generally tried, the treatment both by transfusion of blood, to which the newspapers are giving much attention at the present time, and the other, about which less is said, namely, splenectomy.

I think we should wait the reports from the larger clinics, where clinicians are dealing with the large groups of cases, to give us end-results before the general practitioner rushes ahead with the removal of the spleen or repeated transfusions of blood in the treatment of this disease. I want to give this warning to the members of the Section. We should not be swept off our feet by the publicity given in newspapers to the dramatic situation of donors giving blood wholesale, for, as the newspapers state it, the miraculous cure of this or that person with pernicious anemia. In our own city, I am ashamed to say, even from some of our reputable hospitals, publications have been placed in the newspapers advertising for donors to dramatically and miraculously save the lives of persons, who, the profession at large at the present time probably knows, cannot be saved. They may be temporarily relieved for a few months, possibly for six months, or possibly they may not be helped at all.

But I think we, as medical men, knowing that the whole question is sub judice, ought to place our dis-

approval upon these methods of handling this very serious and remarkable disease.

DR. MARTIN (closing): I was not dealing in this paper with pernicious anemia primarily, but rather with secondary anemias.

Transfusion was used in two or three of these patients who had pernicious anemia, as I recall it, and we got good temporary results. It is interesting to note that in one case, I think Case No. 23, that of a girl of thirteen with marked anemia, the hemoglobin was 35, and the red-cell count one and one-half million. She had been suffering for nearly a year with a rather severe anemia. She had come to the age when chlorosis should be thought of. The red-cell count was too low, and we studied her pretty carefully, and never could

find any reason for the anemia. Transfusion was done about five weeks ago, and 700 c.c. of blood was transfused. It certainly made a remarkable improvement in that patient. The blood-count went up, and the hemoglobin when last seen was well above 50, the count having at least doubled. She was feeling very much better, and that after a period of five weeks. So, no doubt, in some cases of secondary anemia transfusion is of value.

In this series the thing of most interest to me has been those cases of lues which made rather marked improvement under antiluetic treatment.

I am not prepared to say as to the effect of climate on pernicious anemia. It is probable that climate has very little to do with it. I think these patients feel better in warm climates because of the severe anemia.

MASTOIDITIS: ITS PREVENTION, OPERATIVE INDICATIONS, AND OPERATIVE TECHNIC*

BY FRANK C. TODD, M. D.

MINNEAPOLIS

Anatomical Relations.—The mastoid cells are situated back of the middle-ear cavity. Some of these cells extend upwards above the level of the superior portion of that cavity, but most of them extend down into the tip, and are situated below the level of the middle-ear cavity. A large cell called the "mastoid antrum" is situated just above and behind the middle-ear cavity. This antrum connects with the middle ear by way of a canal called the "aditus-ad-antrum." All these cells are lined with membrane which is continuous with the lining of the middle ear. The mastoid cells intercommunicate, and it will be observed upon studying them that they are elongated in a direction which makes them appear to radiate from the antrum.

When we take into consideration this anatomical construction, we may readily see that the only thing to prevent the extension of an abscess of the middle ear into the mastoid cells is this constriction between the antrum and the middle ear,—that is, the aditus-ad-antrum. If it were not for this constriction then practically all abscesses of the middle ear would extend into the mastoid. The inflammatory process causes a swelling of the lining membrane of the aditus-ad-antrum, and thus aids to prevent this complication. We may thus readily see why it is that in some instances where the aditus-ad-antrum is large the mastoid becomes involved almost from the first. It usually happens, however,

that the mastoid cells apparently become involved several days or a week or more after the beginning of a middle-ear abscess, as if the infection had traveled slowly or forced its way as the disease increases in severity.

Another factor which tends towards the development of a mastoid abscess is the character of the pus. If it is thin, that is, serous in character, mastoid infection is more apt to occur. And thus infections which give rise to a serous exudate are consequently more rapid and dangerous. Streptococcic infection gives rise to a profuse, thin secretion. It is rapid and virulent.

This study of the anatomical relationships further shows how imperfect and inadequate is the drainage when the mastoid becomes involved and the pus goes into the upper portion of the mastoid and fills up the cells below and behind. When these cells are filled up their only means of drainage is by way of the upper part, when the secretion "spills over" into the middle ear. Consequently, when pus actually exists in the cells we may not expect relief until the cells are properly drained by operation. This faulty drainage, together with the contiguity of the brain, between which and the mastoid cells the bone is in places no thicker than paper, makes it evident that in those cases where pus really exists in the mastoid, delay and temporizing are dangerous.

Signs and Symptoms Indicating the Presence of Pus in the Mastoid Cells.—What, then, are we to rely upon to determine the question of the

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

presence of pus in the mastoid? Mastoid abscesses are nearly always accompanied and preceded by a middle-ear abscess. The patient usually has had, or is having, fever, which may be attributable to the middle-ear abscess alone; but, as a consequence of the rupture of the membrane or as a result of opening the latter by surgical means, the temperature may have become reduced to normal or nearly to normal. An invasion of the mastoid takes place, giving rise to a return of the fever.

In the presence, then, of drainage through the drum membrane, this sequence of symptoms points to the involvement of a new area, which is almost invariably mastoid cells. In this connection we must not forget the possibility of invasion of the sinus or the meninges with or without mastoid involvement.

The development of swelling over the mastoid, and a high degree of tenderness of the mastoid, of course indicates mastoid involvement, excepting in those rare instances where we have present an external otitis which has given rise to a mastoid periostitis.

There are likewise other contributing signs such as the "dip" in the posterior superior wall of the external auditory canal, the disappearance of the crease in the auricle attachment, but these symptoms may, or may not, be present. The essential point, which is a good guide as to the presence or absence of mastoid involvement, is a continuance of a profuse discharge and particularly the presence of symptoms of retained infection in conjunction with this discharge, in spite of the fact that the drum membrane has been freely opened, so that all of the drainage possible is secured through that channel. Such a profuse discharge with a continuance of the symptoms indicates an involvement of a greater area than the small cavity called the "middle ear," and in the case of an acute infection, usually comes from the mastoid cells.

What I particularly wish to emphasize is this point, that a continued discharge which does not get better indicates mastoid involvement, and it is not necessary to have present the more evident signs which would indicate to anyone the presence of a mastoid abscess, such as extreme tenderness and swelling of the mastoid. In case of doubt a skiagraph showing a comparison between the two sides is of extreme value, and the difference is not difficult to determine.

When to Operate.—When we feel confident that pus is present in the mastoid, as determined

by the preceding suggestions, we should operate at once. We may delay in certain cases until we feel sure of this fact, but when once we have determined this point, then we should not wait until the next day, as there is nothing to be gained, while we are running a risk. In cases in which the only evidence that we have of the existence of a mastoid abscess is the continuance of a discharge in spite of free drainage of the middle ear, which may be confirmed by a skiagraph, we should operate, because a continuance may not alone mean the possibility of a more serious complication, but because the case is liable to lapse into a chronic middle-ear suppuration, while the patient would be spared the annoyance, ill health, deafness, and other accompaniments of chronic suppurative otitis media.

Streptococcic infections with mastoid symptoms demand early operation, even though those symptoms are not pronounced, as this infection spreads rapidly and is prone to produce complications that may prove fatal.

An early operation in the case of acute mastoiditis results in a much shorter convalescence than where operation takes place late after the cells have been generally broken down; and, therefore, aside from the dangers of delay which may lead to death, it is a decided advantage to operate early.

When we consider the possible complications leading to fatal results that exist, and the safety of the operation when correctly performed, we may see the folly of delay just for the sake of avoiding an operation that is not in itself dangerous. The surgeon who studies this subject and considers the inadequateness of drainage through the middle ear, must consider it very poor surgery to attempt to cure a mastoid abscess without opening "at the bottom" and securing complete drainage. I must admit that there are some cases in which resolution will take place where apparently a mastoiditis exists, but there are many more in which attempts are made to cure the disease without the mastoid operation, which result fatally or in a protracted discharge with its consequent loss of the function of hearing and deterioration of health; and, I think, it is far better to make the possible mistake of operating on an occasional patient who might have gotten well without the operation, than to have one fatality as a consequence of neglect.

Technic of the Operation.—The operation for acute mastoiditis for the usual case may be done rapidly and without danger to the patient. The

bone should be rapidly and freely exposed from the very tip of the mastoid to the suprameatal spine, and with a large gouge entrance should be made just below the level of the superior border of the external auditory canal. By the use of forceps and curettes the entire remainder of the operation may be rapidly effected. It is best to go at once to the antrum, so as not to lose the relationship of the parts. One may then soon determine the location of the sinus, and avoid it. The bone over the entire mastoid, including the tip, may be safely and rapidly removed. All cells should be entered, because it often happens that remote cells are full of pus. The cavity should be funnel-shaped at the completion of the operation, so that healing may take place gradually from the bottom.

It is wise in most instances not to curette out the antrum, but to secure a free opening into it. A too free curetting and cleaning out of the antrum often results in the formation of a cavity in the antrum, which does not fill up and which leaves a fistula for a long time, or which may break down later. I believe this is a very important point. The cavity should then be lined with rubber tissue and packed with iodoform gauze. The rubber tissue prevents the gauze from becoming attached to the soft parts, so that the entire mass comes away very readily at the first dressing without causing bleeding or pain.

I have not attempted nor intended to go into detail regarding the technic of the operation, nor to take up the subject in the text-book style, but to bring out some practical points which may not be read in the text-books, but which may be of value in the consideration of these cases.

DISCUSSION

DR. CARL FISHER (Rochester): Dr. Todd has come down to fundamentals in this paper; and, I think, it is a very good thing to have the necessary things emphasized as opposed to the frills. If these things are heeded, it seems to me, most of the catastrophes with which we are confronted quite often will be avoided.

In the course of a year's work the otologist is bound to run across a good many cases, for instance, of mastoiditis that have developed which need not have developed, or met catastrophes, like meningitis, which, in all human possibility, could have been avoided by proper attention in the early stage of the disease. The same errors are recorded with such uniformity year after year, that it seems worth while to enumerate them, not in a spirit of criticism, but as essentials in the treatment of ear diseases.

It seems to me the commonest mistake made in handling cases of acute otitis media is due to timidity or a desire to be conservative. The desire to be conserva-

tive is laudable, but it results not infrequently in a reckless rather than a conservative course. I suppose that a good proportion of the cases of middle-ear disease have gone on to mastoiditis after quite a long course of treatment with glycerin to the eardrum and atropin drops and sweet oil and laudanum. That kind of treatment, I think, is too often the cause of mastoiditis and its sequelæ.

There is no doubt that a certain number of cases of mastoiditis will spontaneously cure themselves, as Dr. Todd has said. It has been my luck to see a number of cases which apparently cure themselves spontaneously, but in which a few weeks later the patients develop serious symptoms of the disease; so these apparently spontaneous cures are rather deceptive. It is safer to operate.

There is another thing, an abortive treatment, which is used a good deal. An ice-bag is placed on the mastoid bone to relieve pain. There seems to be a difference of opinion in regard to its value, and I do not suppose anyone conceives or believes the amount of cold given by an ice-bag over the mastoid bone will kill any of the bacteria in the bone. This is putting an ice-bag on one's judgment rather than on his patient.

There are one or two other points I wish to call attention to. The use of poultices and leeches I have put down as bad practice, but this practice is so common that it should be mentioned. The only thing that a poultice or a leech will accomplish is to make the skin sore and the mastoid tender. One cannot say whether the tenderness is due to the application of a leech or a poultice or to pus, and I do not believe there is anything that will mask the clinical appearance at a very important point as much as the use of those agents.

Dr. Todd has emphasized the great penalty often paid for allowing cases of mastoiditis to go too long; and, it seems to me, although it is undoubtedly true that very few cases of mastoiditis go on to meningitis, that treatment should be instituted early to guard against it. One's attitude towards such cases is important. Certain men start with a conservative attitude, while others start in with a radical attitude. A scientific man should not have any attitude at all, but most people are made that way. The man who takes a radical attitude with regard to middle-ear disease is the one who is going to save the most lives.

Another point which I think is very commonly overlooked is, that mastoiditis in young children and in infants is very often present as an acute general infection without any localization. Of course, we cannot expect an infant to point to his ear and tell us where the pain is, but that is expected by a great many men. Many times during the year we see fatal results from neglecting such a simple thing as examination of the eardrum. This week two young children were seen having had a previous diagnosis of epilepsy; but autopsy showed both mastoids full of pus, and one showed, in addition, thrombosis of the lateral sinus. It is hardly conceivable that a mastoiditis and acute middle-ear trouble, which accompanies it, could have been overlooked if the ears had been examined, but such slips occur to the most capable people.

It is worth while to emphasize once more that symptoms of mastoiditis or otitis media may not point to the ear, and that physical examination is the only thing that will reveal it. On the other hand, a great many

cases of mastoiditis in adults will run a long course without any fever, and the fact that a patient has no fever is not a sign at all that the patient has not a severe mastoiditis. Pediatricists have been more active than otologists in pointing out the importance of a general reaction in infants. The professor of pediatrics in Tuft's College last year reported several cases of acute otitis media which came wrongly to laparotomy.

There are several misconceptions about the mastoid operation which I know to be widespread. The first misconception is, that the operation usually causes facial paralysis. That is untrue. There are a number of otologists in this country who have run a series of over a thousand cases without a single facial paralysis; and the only facial paralysis you are likely to see is a temporary paralysis that comes on in four or five days after operation and disappears within a week or so, which is not an operative disaster. Facial paralysis may be entirely eliminated from consideration, if the operator is moderately familiar with the anatomy.

A certain number of cases do not heal very well. It is often said that an acute mastoiditis is an osteomyelitis, and therefore requires repeated operations. A mastoid that is cleaned out thoroughly will practically always heal the first time. Dr. Reik reports that 75 per cent heal by first intention. Cases under the best of care occasionally do not heal well, and in such, as the wound is opened up and the actual condition seen, one finds obvious mistakes. One of the commonest is to find that there has been simply an incision of the periosteum, Wilde's incision; and it is quite obvious why the wound did not heal up. You may find that only a part of the mastoid cells have been exenterated, and naturally the wound fails to heal. A common error which we find in cases that have to be re-operated on is that the operator has left some overhanging bony shelf inside of a flat cavity, resulting in large vacant spaces which fill with granulation.

That is about all that occurs to me to say in discuss-

ing this paper, which has covered these fundamental things well. It is a privilege to have a chance to attack those hoary blunders which we see constantly, namely, overconservatism and procrastination.

DR. L. L. McARTHUR (Chicago, Ill.): As a general surgeon, I feel like saying a word or two in regard to these mastoid abscesses. Any practitioner doing a minimum amount of surgery can, at the moment when a mastoid abscess is evident, and there is an indication for interference, make the small periosteal incision of Wilde, over the prominent portion of the mastoid, perforate the bony wall, and relieve the tension, and thus save the patient the dangers of an immediate meningitis. I feel that the general practitioner in the country should not wait until he can get the patient to a specialist in this line, but should endeavor to give temporary relief with great benefit to the patient and to himself. The general surgeon thirty years ago did this. I have made many a mastoid opening prior to the days when otology became a specialty. I do not do so now, but turn these cases over to a specialist. Experience has taught me that the majority of the acute symptoms can be relieved by a simple perforation of the bony wall. That can be done in the emergency; and then the man who is not familiar with the technic of the modern operation can send the patient to the expert aurist for the final work.

DR. TODD (closing): I am very thankful to Dr. Fisher for emphasizing the points I intended to bring out, particularly the question of timidity and pride under the mask of conservatism. We sometimes see cases in which spontaneous cure has taken place where we thought a mastoid abscess existed. Whenever I see such a case I am worried after the case has left my hands, or, if the case is apparently well, for fear that there will be some more trouble; and I have never operated in a case in which I have had cause to regret operating.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

W. A. JONES, M.D., EDITOR

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

MAY 1, 1917

HEALTH LEGISLATION IN MINNESOTA

The recent Minnesota Legislature was more generous to health interests this year than in many years past, in spite of the fact that a bill was introduced to eliminate the present State Board of Health and to provide for the appointment of a new board of five members, all of whom, including the executive officer, were to be selected by the Governor. The Senate bill, as most of our readers know, was an outgrowth from the Efficiency and Economy Commission and did not embody many of the suggestions made by the Governor's Commission on Public Health. The bill was pushed through the Senate by a vote of forty-three to eighteen, but when it reached the House, all of the vital parts of the bill were eliminated, and the House amended it so that it simply provided that the State Board of Health should continue to conduct the health work of the State of Minnesota in the manner now prescribed by law and to take over the work of the Advisory Commission. The Senate refused to accept the House amendment under any condition, and, although there were several conferences between the Senate committee and the House committee, the bill finally died by strangu-

lation; consequently, the State Board of Health remains as it was. The Advisory Commission is still an independent body and has the supervision of the various sanatoria for tuberculosis that have been constructed in the State.

The defeat of the Senate bill has not been entirely explained except that there was, in all probability, an antagonism in the House toward any of the Efficiency and Economy Commission's bills. THE JOURNAL-LANCET, however, is rather inclined to think that the interest and vigorous attitude of the medical profession of the State of Minnesota and the rigid stand which was taken by many physicians, health officers, and others, was more or less responsible for the attitude of the House.

The President of the State Board of Health wishes to extend to the medical profession of Minnesota the congratulations of the State Board of Health, and to express the Board's appreciation for their hearty support. Many letters have been received from physicians and laymen in which they have declared their confidence in the State Board of Health and its present working power. The Legislature went on record as appreciating the value of the work of the State Board of Health, notwithstanding the opposition of a small minority of doctors and others; and their appreciation is shown by the appropriation of approximately \$102,000 for the State Board of Health, and an additional appropriation of \$25,000 a year for the next two years for the stamping out of infantile paralysis. This will give the State Board of Health opportunities for extending its work.

Among the new duties which have been delegated to the Board is, first and perhaps most important, the regulation of industrial camps. This is a big item, and probably had much to do with the increase of appropriations. It means that the State Board of Health may be able to regulate the sanitary conditions of camps in the woods, lumber-camps, and other camps in which large numbers of men are employed. Notwithstanding the efforts on the part of corporations to maintain sanitary camp-life, there has been much discord and dissatisfaction among the camp-workers, first, because the buildings were inadequate, and, next, because they were not kept in a sanitary condition. The ventilation seemed to have escaped them, and cleanliness or methods of cleanliness were almost impossible. Then, too, the Legislature has enlarged the power of the Board by changing the laws whereby the health

officer, rather than the health board, of towns and villages, is empowered with the proper authority to investigate and stamp out infectious diseases.

The State Board passed a resolution advising physicians and midwives to use a 1 per cent solution of nitrate of silver to be applied to the eyes of the new-born. The Legislature passed a bill approving this course, and authorized the Board to assume that obligation.

One of the bills under the Child Welfare Act provides for vital statistics among illegitimates, which is a very important measure in child welfare work.

It is impossible at this time to get a line on all the bills that were passed, which concern the State Board of Health. The rush of bills at the last moment was so great that their sorting out, engrossing, and signing by the Governor, has not been completed at this time.

Altogether the State Board of Health feels that its work has been enlarged, and the opportunity for demonstrating its efficiency will probably bear fruit within the next two years.

There was no lobbying done by the State Board of Health in the Legislature, but the medical profession was circularized with letters setting forth the aims of the Board and asking the recipients of these letters to express their wishes to the individual legislators. This is a perfectly proper and ethical method to conserve the political side of public health.

WASTE AND WAR

The London letter of the *Journal of the A. M. A.* for April 21, 1917, describes the measures which are taken to deal with the disabled of the war and their dependents, who have already reached a huge total. These figures are quoted directly from the correspondent:

Number of disabled men at present, 157,544.

Widows, 62,796.

Children of those widows, 128,294.

Dependents of deceased men, 29,832.

Widows who have not reached the pension stage, 125,000.

Men in hospitals, about 65,000.

Medically unfit, about 65,000.

Total of 673,741 men, women, and children.

This huge list makes it a very difficult problem to decide what shall be done with these dependents. "In future if a man's disease is aggravated by the war, he will get his pension just the same as though it was caused by the war. Formerly he

received only a single sum in the form of a gratuity."

Mr. Barnes, the Pensions Minister, who makes this report, had two new suggestions in regard to treatment and training. With regard to treatment, a man may be fined if he does not conform with the recommendations of his physician. That is a new thing, and confers upon the physician an authority which he has not hitherto had. As to training, the intention is to attract a man to a suitable vocation by additional inducements. He will be given full pension, fees will be paid for him, his wife will have a separate allowance, and in addition for the period during which he undergoes training for a new occupation, he will be given \$1.25 a week as a bonus at the end of the period. The whole scheme, according to the actuary's report, will involve a capital charge of \$1,980,000,000, and in the first year \$125,000,000.

The medical unfit numbered over one hundred thousand, and were not discovered at the time of enlistment because the physicians who examined the recruits had so little time for careful examination and investigation. Consequently many of these unfit have passed into the army who never ought to have been there at all. Some concealed their ailments, and thousands of them did not do more than two or three days' service. But in spite of this, and because physicians had passed them, England assumes some responsibility for them. It is proposed that these people are to be put back where the country originally found them.

This brings us to the actualities of war, but only from one point of view. If anything like this should occur in the United States, it would simply mean the resurrection of the old pension list which has been a burden on the Nation since the end of the Civil War.

MILITARY PREPAREDNESS

The attention of our readers is called to a paper in this issue by Dr. J. S. White, of St. Paul, on military preparedness. Dr. White was formerly a medical officer in the United States army, consequently he speaks with authority. Particular attention is called to his statement that in case of war the United States must provide about twenty-five thousand physicians, which seems an incredible number, and yet when we consider the number of physicians who have been detailed with the armies of Europe we find that the number required is not overestimated at all. In fact,

in many of the countries abroad there are not enough physicians or surgeons to care for the wounded in an adequate manner; particularly is this so in Russia, where medical facilities are reduced to a minimum, and the numbers of medical men have been far below the average of other countries.

Already THE JOURNAL-LANCET has received letters from men who are willing to enlist in some capacity, but are not quite certain as to how to go about it. The attention of our readers is called to a recent issue of the *Journal of the A. M. A.* in which there are application forms for those who are willing to accept service. These forms cover the personal history of the applicant in every possible manner. They may be sent to the War Department, directed to the Medical Officer Reserve Corps of the United States Army. Enlisting as a medical officer means a great sacrifice on the part of the physician and surgeon. It may mean that he is to be absent from his home duties for a few months or perhaps a few years, but this should not deter anyone who is able and capable of serving his country in this capacity. It will be a great experience for younger men, not only in personal training, but in the observation of unusual conditions found only in war life.

The Hennepin County Medical Society is a self-appointed recruiting office for medical men who expect to enlist for service. The Society proposes also to see that the deserving families of recruits are provided with free medical care, and a resolution has been passed whereby the practice of the enlisted medical man will be taken care of, and a proper proportion of the fees collected, probably 33 per cent, will be paid over to the physician's family by the attending physician; and all such patients will be returned to the medical recruit on his return from service.

THE AMERICAN MEDICAL ASSOCIATION MEETING

The meeting in New York City this June will probably be attended chiefly by men from the Eastern states unless the railroads are able to revise their schedule recently outlined in the daily papers. For instance, it is proposed to cut off many passenger trains, retaining only

one passenger train East and West over each line of road, in order that the freight congestion may be relieved, that supplies may be forwarded to various parts of the country where recruiting is going on, and that the movements of troops, and particularly the movement of food stuffs, may be accelerated. In spite of all of these difficulties, however, it is quite probable that the meeting will be largely attended. New York City, through its local committee on arrangements, has done much to make it possible for the visitors to enjoy a very important series of clinics, which will begin Monday, June 4, and continue through Tuesday, June 5, the opening day of the session. Clinics and demonstrations in all departments of medicine will be presented, including every possible correlated branch, especially the departments of surgery and medicine, including nursing, training-schools, district nursing, hospital social service, planning and financing municipal and other hospitals, hospital superintendency and executives, and military and Red Cross work.

It will be well to make reservations for one's trip to New York very early. It is further necessary to secure hotel accommodations in New York, as in normal times most of the hotels are filled to overflowing. Unless this is done many medical men will find themselves relegated to obscure hotels and boarding-houses.

THE ANTI-AFFILIATION BILL

The bill directed against the Mayo affiliation has been the subject of active discussion, some bitter feeling, and at least an evidence of the opposition which has been slowly developing and crystallizing. The bill, however, seemed to be unpopular except with a majority of medical men. The people of the state, and many people in other states, were in sympathy with the affiliation between the Mayo Foundation and the University, and it required but little effort on the part of the opponents of the bill to see that it was deeply buried.

THE JOURNAL-LANCET has no desire to discuss the affiliation further, and has decided to refuse the admission to its columns of letters, protests, or affirmations concerning the affiliation, at least for the present.

CORRESPONDENCE

TO THE OFFICERS AND MEMBERS OF ALL COUNTY MEDICAL SOCIETIES

I respectfully call your attention to the letter which follows and which was published in the April number of "*Surgery, Gynecology and Obstetrics*." Knowing that the patriotism of the medical profession of Minnesota is second to none, the suggestion should be adopted without a dissenting vote from any of the members.

H. M. WORKMAN, M. D.,

President of the Minnesota State Medical Association.

TO THE EDITOR:

Should the country ever be engaged in war, the Medical Department of the Army in calling reserve officers to the colors, wishes to cause as little hardship and sacrifice to the reserve medical officers as may be consistent with the needs of the country. With this end in view the Department desires that you bring to the attention of the profession at large the necessity of the city, county, and state medical societies organizing for the purpose of taking care of the practices of the officers of the Reserve who respond to a call for service. In England this plan has proved of great benefit. The idea of the Department is that the profession should organize upon a similar basis.

For example, should Dr. Jones be called to the colors, the local medical society, through its members, would take care of his practice during his absence. Upon relief from active duty his practice would be returned to him intact. Such a plan will cause no unnecessary hardship upon the officer responding to a call for service, while the absence of such a plan would penalize the officer who gives his service to the country in a crisis.

The Department appeals to the patriotism of the profession, to protect the interest of those of the profession who may be called to duty in war.

Respectfully,

ROBERT E. NOBLE,

Major, Medical Corps, U. S. Army,

For the Surgeon-General.

REPORTS OF SOCIETIES

THE MINNESOTA HOSPITAL ASSOCIATION

In response to a call signed by fourteen hospital superintendents in Minneapolis, a meeting was held at the Radisson Hotel on Friday, April 20, for the purpose of forming an association of the hospitals in the state. Of the 152 hospitals to which the call had been sent, 36 were represented at the meeting and 12 others sent written application to be entered as charter members.

The meeting was opened at 10 A. M. by Mr. G. W. Olson, superintendent of The Swedish Hospital, Minneapolis, in his capacity as president of the Minneapolis Hospital Council, through which organization the move for a state association was initiated. Mr. Olson

was elected temporary chairman and Mrs. Geo. G. Eitel, superintendent of Eitel Hospital, Minneapolis, temporary secretary.

In his opening remarks the chairman referred to the benefits to be derived from conference and co-operation between the hospitals throughout the state. Similar organizations in other states, notably Ohio, West Virginia, Kansas, and Maryland, were alluded to. A state association was being formed at the same hour by the hospitals of North Dakota; and Chicago hospital superintendents, after experiencing the benefits of co-operation through a local organization, are making plans to form a strong state association in Illinois. Economies in administration through the standardization of business methods, and uniformity of policy in dealing with patients, public, medical profession, and employees, were named as some of the practical objects to be attained by conference and co-operation. Legislation for the protection of hospitals against fraud and imposition and against injustice of many descriptions can be secured only through state-wide organized effort.

It was unanimously decided to organize "The Minnesota Hospital Association." A constitution and by-laws, a draft of which had been prepared by a committee of the Minneapolis Hospital Council, were adopted. The object of the association is "the promotion of economy and efficiency in hospital management, and the welfare of hospitals and hospital workers in Minnesota." Membership is of three classes: active, associate, and honorary. Active membership is open only to executive heads of hospitals; and associate membership is open to trustees or members of hospital boards, and to executive officers of hospitals next in authority below the superintendent. The association is governed by a president, three vice-presidents, a secretary-treasurer, and an executive committee to which three members are elected and of which the president and secretary-treasurer are ex-officio members. The standing committees appointed by the president are an auditing committee, a membership committee, a nominating committee, a committee on legislation, and a committee on constitution and rules.

Following the adoption of the constitution and by-laws, a committee on nomination of permanent officers was appointed with instructions to report at the evening session. Adjournment was then taken until 6 o'clock. At 2 o'clock a tour in automobiles provided by Minneapolis hospital superintendents was made to the various hospitals in the city. The new pavilion of the Maternity Hospital was the object of special interest, as was also the large new building being erected for St. Mary's Hospital. Miss Bertha Matlick, superintendent of Hill Crest Hospital, was chairman of the committee in charge of the automobile tour.

At 6 o'clock an informal dinner was served in the Empire room of the Radisson Hotel in connection with the final session of the meeting. The nominating committee reported the following nominations: President, G. W. Olson, Swedish Hospital, Minneapolis; first vice-president, G. H. Murray, More Hospital, Eveleth; second vice-president, Rev. J. A. Krantz, Bethesda Hospital, St. Paul; third vice-president, Sister Mary Joseph, St. Mary's Hospital, Rochester; secretary-treasurer, Frederick Paulson, Norwegian Deaconess Hospital, Minneapolis; executive committee members, Miss Harriet Hartry, St. Barnabas Hospital, Minneapolis; Rev. Henry

Hartig, St. Andrew's Hospital, Minneapolis; Dr. S. G. Cobb, Cobb Hospital, St. Paul. The committee declined to name more than one candidate for each office and urged the unanimous election of its nominees, which was promptly done. Mr. Paulson pleaded his inability to accept the office of secretary-treasurer on account of lack of time for the duties involved. His resignation was accepted with regrets, and Mrs. Geo. G. Eitel, Eitel Hospital, Minneapolis, was elected to the office of secretary-treasurer.

It was decided to hold the first conference of the association some time in November or early December. The fixing of the time and place and the preparation of a program were left to the executive committee. Several topics of especial interest to hospitals in the smaller communities were suggested.

Following is a list of those who were enrolled as members at the organization meeting:

Name.	Hospital.
Sister Gina K. Aarsrud.....	Fairview, Minneapolis
Sister Grace Aurelia.....	St. Joseph's, St. Paul
L. B. Baldwin, M. D.....	University, Minneapolis
Geo. Wm. Beach, M. D.....	State Sanatorium, Cass Co.
Robinson Bosworth, M. D.....	.....
P. H. Braithwaite, R. N.....	County and District Tuberculosis Sanatoria
Frances S. Cooney.....	City, Stillwater
Herbert O. Collins, M. D.....	Northwestern, Princeton
A. Jeanette Christianson, R. N.....	City, Minneapolis
Sister Mary Charles, R. N.....	Northwestern, Mpls.
Mary C. Clendenin.....	St. Joseph's, St. Paul
S. G. Cobb, M. D.....	Maternity, Minneapolis
Mrs. George G. Eitel.....	Cobb, St. Paul
Sister M. Esperance.....	Eitel, Minneapolis
Rev. Henry Hartig.....	St. Mary's, Minneapolis
Harriett Hartry.....	St. Andrew's, Minneapolis
J. E. Haugen.....	St. Barnabas, Minneapolis
Susan Holmes.....	St. Paul, St. Paul
H. M. Johnson, M. D.....	Abbott, Minneapolis
W. A. Jones, M. D.....	Dawson Surgical, Dawson
Sister M. Joseph.....	S. Side Sanatorium, Minneapolis
Hannah Keller.....	St. Mary's, Rochester
Lydia H. Keller.....	St. John's, Red Wing
Anna Kippen.....	Asbury, Minneapolis
Rev. J. A. Krantz.....	Naeve, Albert Lea
Mary C. Ledwidge, R. N.....	Bethesda, St. Paul
Sister Leo.....	St. Mary's, Rochester
Bertha Mallick.....	St. Mary's, Minneapolis
T. T. Morken.....	Hill Crest, Minneapolis
G. H. Murray.....	Bethesda, Crookston
Delia O'Connell.....	More, Eveleth
G. W. Olson.....	Rest, Minneapolis
Fred Paulson.....	Swedish, Minneapolis
P. C. Pilon, M. D.....	Norw. Deaconess, Minneapolis
Georgia H. Riley.....	Pilon, Paynesville
May H. Smith.....	Montevideo, Montevideo
H. L. Taylor, M. D.....	Winona General, Winona
Regina B. Werner.....	Pokegama Sanatorium
Bertha S. Johnson, R. N.....	St. Gabriel's, Little Falls
A. T. Laird, M. D.....	Minnewaska, Starbuck
Elizabeth McGregor.....	Nopeming, Duluth
R. M. Phelps, M. D.....	State Children's, St. Paul
Henry Wieslow.....	State Asylum, St. Peter
Emma Potter.....	City, Worthington
E. M. Laverney.....	Union, New Ulm
O. H. Urstad, M. D.....	Lake City, Lake City
Anna M. Emge.....	Dr. Urstad's, Kiester
	Western Minnesota, Graceville

NEWS ITEMS

Dr. W. W. Brown, of Virginia, has located in Morton.

Dr. W. H. Eaton, formerly of Worthington, has moved to Hanley Falls.

Dr. G. H. Crary has left Fingal, N. D., and moved to Great Falls, Mont.

Dr. O. N. Meland has moved from Detroit, Minn., to Grand Forks, N. D.

Dr. A. V. Denman succeeds Dr. A. F. Schmitt as city health officer of Mankato.

Dr. H. M. Bracken is attending a conference of state health officials in Washington.

Dr. M. H. Cremer has returned to Red Wing after spending several weeks in Texas.

Dr. A. E. Johnson has resumed his practice at Cloquet after an absence of several years.

Dr. W. C. Moodie, of Jefferson, S. D., has taken over the practice of Dr. A. C. Phillips, of Elk Point, S. D.

Dr. J. J. Buckley, for thirty years one of Montana's leading physicians, died on April 14 at his home in Missoula, Mont.

Minneapolis physicians will treat the families of all soldiers from the city free of cost while such soldiers are absent on duty.

Dr. C. J. McGurran has been appointed to succeed himself as Superintendent of the North Dakota State Board of Health.

The spring graduating class of the Nurses' Training-School of the Mounds Park Sanitarium, of St. Paul, consisted of nine nurses.

Between nine and ten thousand people have been vaccinated in Hibbing and the immediate vicinity because of a threatened epidemic.

Typhoid vaccine manufactured by the South Dakota State Board of Health is now ready for free distribution to physicians throughout the state.

Dr. C. A. Boreen, of Minneapolis, has resigned as instructor of dermatology and syphilis in the Medical School of the University of Minnesota.

The entire staff of the Minneapolis City Hospital has offered itself to the American Red Cross for any service that may be demanded in or near Minneapolis.

The North Dakota hospital superintendents organized an association last month along the lines of the Minnesota organization noted in another column.

Dr. E. H. Trowbridge, acting superintendent at the School for Feeble-Minded at Faribault has resigned, and Mr. G. A. Merrill, of Owatonna, has temporarily taken his place.

Reference is made in an editorial in this issue concerning the importance of making reservations for the trip to the A. M. A. meeting. We shall make a detailed announcement of the arrangements in our next issue.

At the request of the Council of National Defense probably all medical schools in the country will not close for vacations until the war is over. The Medical School of the University of Minnesota will remain in continuous session. A freshman class will begin work at the beginning of the summer term.

The staff of the base hospital to be conducted by the University of Minnesota has been announced. It is, of course, a large one. Dr. A. A. Law heads the staff, and the other members are from the staffs of the Medical School and the Mayo Clinic. The entire staff of surgeons, nurses, and assistants includes over three hundred persons.

The annual meeting of the Stearns-Benton County Society was held at St. Cloud on April 19. A paper on "The Use and Limitations of Digitalis" was read by Dr. S. M. White, Minneapolis, and was fully discussed; and one on "Arthritis Deformans" was presented by Dr. G. A. Holdridge, of Foley. Officers were elected as follows: President, Dr. G. A. Holdridge, Foley; vice-president, Dr. Geo. D. Rice, St. Cloud; secretary-treasurer, Dr. J. C. Boehm, St. Cloud; delegate, Dr. Wm. Friesleben, Sauk Rapids.

The Upper Mississippi Society met in Little Falls last month in the new St. Gabriel's Hospital building. Dr. Thos. McDavitt, of St. Paul, read a paper on eye diseases; Dr. J. H. Freeman told of the work he is doing at the Inebriate Hospital at Willmar; Dr. A. W. Ide, of Brainerd, presented several fracture cases; Dr. C. H. Pierce, of Menahga, read a paper on the injurious use of patent medicines; and Dr. J. G. Millsbaugh, of Little Falls, presented some interesting clinics. The next meeting will be held at International Falls.

OFFICE FOR RENT

A physician's and dentist's office for rent in a good location. Three hospitals near by. Vedeler Drug Store, 2200 Riverside Ave., Minneapolis.

POSITION WANTED BY NURSE

A Chautauqua School nurse desires a position in a physician's office, in a private office, or with a physician where she can have practical work continuously at a reasonable salary. Address 486, care of this office.

OFFICE FOR RENT

An excellent location on one of the best corners of East Lake Street, Minneapolis, in a modern building. Dentist shares reception room. Present tenant desires to move down town. Address Dr. O. R. Bryant, 802 E. Lake Street, Minneapolis.

POSITION IN OFFICE WANTED

Nurse with knowledge of bookkeeping and stenography desires position in a doctor's office. Phone Nicolet 2947, or address 479, care of this office.

POSITION OPEN

I want a locum tenens or I will sell my unopposed practice in southern Minnesota for the price of office equipment. Large territory and fine location. Address 492, care of this office.

PHYSICIAN WANTED

Fine location—village of 300 in Southern Minnesota. Large territory tributary; at least \$100.00 per month guaranteed from the start. Address 488, care of this office.

PHYSICIAN WANTED

We desire the services of a good physician. Will pay \$125 per month, with room and board. Give particulars. Jordan Sulphur Springs and Mud Bath Sanitarium, Jordan, Minn.

OFFICE POSITION WANTED

Young woman with experience as stenographer and bookkeeper desires position as office assistant in a physician's office in Minneapolis. Best of reference. Address 478, care of this office.

POSITION WANTED

An assistantship, partnership, or locum tenens work in Minnesota by an experienced physician who can give best of references. Internal medicine, obstetrics and pediatrics preferred. Address 494, care of this office.

FOR SALE

Practice of \$3,500 to \$4,000 in a village of 600 in Southern Minnesota. Collections 95 per cent. Town has high school and electric lights. No real estate. Might form partnership. Address 487, care of this office.

LOCUM TENENS WANTED

I want a physician to take care of my practice in North Dakota for six weeks, beginning about May 15th, while I take some postgraduate work. Address 489, care of this office.

PRACTICE FOR SALE

I offer for sale my practice in Minnesota, 100 miles west of the Twin Cities. It pays between \$5,000 and \$6,000 a year. Purchaser either buys my property (modern home, etc.) or pays \$500 bonus without the property. A snap! Answer quick. Address 493, care of this office.

LOCUM TENENCY WANTED

Recently finished my internship at the City and County Hospital of St. Paul and can give best of references as to ability and character. Can go at once and for any length of time not exceeding four months. Prefer small town with little or no competition. Address 491, care of this office.

PUBLISHER'S DEPARTMENT

ARMOUR AND COMPANY'S YEAR BOOK

A company that manufactures 3,000 products, mainly meats and vegetables, justly issues a Year Book for the information of the public it serves. When such a company establishes great research laboratories, and manufactures many new pharmaceuticals, its work becomes of special interest to physicians.

For these reasons we call the attention of our readers to the current Armour Year Book, which the Company is pleased to send free to any physician. This booklet is exceedingly informing and interesting.

POISONOUS FLY PAPER

Every effort made out of doors to destroy flies should be supplemented by a like effort to destroy every fly that gets into one's house; and this means that every house, and especially every sick-room, should have fly-paper for this purpose. The universal use of fly-paper has long been prevented by the fear of poisoning the children of the household, which is a real danger when arsenical fly-papers are used. An absolutely non-poisonous paper called "Tangle-foot" has been on the market for 30 years, and deserves to come into universal use because of its safety to humans and death to flies.

MELLIN'S FOOD

Modern medical science has a few great victories to its credit, among which are the treatment of children, in medicine proper, and the treatment of wounds, in surgery. The treatment of children that has so greatly reduced the rates of both mortality and morbidity, means the management of their diet. A few years ago artificial foods were greatly discredited, almost tabooed by medical men; but the modern scientifically prepared food is now recognized as an essential part of treatment when a child is deprived of its natural food, or when its natural food is not a reliable food because of the condition of the mother.

Mellin's Food is recognized as a food that is all that science can make it, and is nearer the mother's perfect food than any other artificial food yet manufactured.

BASE HOSPITAL OFFERED RED CROSS AS MEMORIAL

Eli Lilly & Company has offered the local chapter of the American Red Cross \$25,000 in event of this country being drawn into war, to establish a base hospital of 500 beds, surgical and medical equipment, and tentage.

The offer was made as a memorial to Colonel Eli Lilly whose splendid service as a soldier and a citizen is worthy of the highest honor that can be accorded him.

The equipment of this base hospital will include every kind of supplies, from surgical instruments to bandages and clothing for patients. It is the intention of the local medical society to form a staff to operate the Colonel Lilly Memorial Hospital, which will be made up of twenty-three medical officers, two dentists, a chaplain, fifty nurses, twenty-five nurses' aids, fifty men for administrative duties, and ten civilians for general assignments. In event of war the unit staff will be

available to move forward with the equipment of the hospital. Steps have already been taken to organize classes of men and women for training in first aid. The entire equipment and staff will be under the command of the Red Cross.

KENILWORTH SANITARIUM

No sanitarium in the West, if indeed in this country, stands higher than Kenilworth in the treatment of nervous and mental cases. Dr. Sanger Brown has been a pioneer in the advanced sanitarium treatment of these cases, and he is today without a superior in this line of work.

His institution meets the needs of the most exacting patient, but it never fails to demand for a patient what is best for his or her own welfare as determined by the modern science of sanitarium treatment. The scientific treatment of mental and nervous cases is not yet divorced from kindness, at least at Kenilworth; and the patient who comes under the care of Dr. Brown's staff is certain to have the best possible chance of recovery.

Kenilworth is an ideal home under scientific management.

MINNEAPOLIS CLINICAL LABORATORY

Dr. Henry L. Ulrich, the director of the above-named laboratory, is among the foremost clinical laboratory men in the country, and is a pioneer in this work in the Northwest. He is recognized, not only in Minneapolis and the Northwest, but in the entire country as a very high authority on autogenous vaccine therapy.

His work in Minneapolis is largely consultation work in his line, and he is now well known in the entire Northwest as a wholly dependable man in clinical laboratory work.

We cannot speak too highly of Dr. Ulrich as a safe and wise man for consultation in the diagnosis of the very obscure cases in which laboratory examinations so often supplement bedside work.

His Clinical Laboratory has done work for the medical profession of the Northwest that is worthy of great praise.

THE TREATMENT AND PREVENTION OF HAY FEVER

From the earliest times hay fever seems to have been associated by the laity with the flowering of various plants. The first definite proof that pollen was the causative factor was furnished by Blackley in 1873. He found that symptoms of hay fever did not appear until the pollen grains in the air had reached a certain number. He also showed that pollen may travel for great distances, so that removal to a considerable distance from the location of flowering plants did not always afford relief.

Dunbar considered hay fever to be due to a toxin contained in the pollen and endeavored to produce an antitoxin by immunizing horses with pollen toxin or pollen protein in about the same way diphtheria antitoxin is produced. The object was to use the resulting antitoxic serum in the treatment of hay-fever patients. More recent investigations show Dunbar's theory of antitoxin formation to be at fault. The symptoms of hay fever are now considered as being due to sensitization—in other words, to an anaphylactic condition.

Noon, working in Wright's Laboratory, was the first

to report successful results in the treatment of hay fever with subcutaneous injections of pollen extracts. More recently Clowes, Lovell, Lowdermilk, Ulrich, Kössler, Manning, Cooke, Wood, Goodale, Hitchens, and Brown have confirmed the findings of Noon.

Hay Fever Vaccine "Spring" Mulford contains the varieties of pollen which are the causative agents in the great majority of hay-fever cases occurring in the late spring or early summer. Hay Fever Vaccine "Fall" Mulford contains only the protein extract of ragweed pollen, and Hay Fever Vaccine "Fall" Mixed Mulford contains the protein extracts of ragweed, golden-rod and maize. This is the season of the year for immunization against spring hay fever and an announcement regarding the method of furnishing Hay Fever Vaccine "Spring" Mulford is found on another page of this publication.

THE OBSTIPATION-STASIS-AUTOTOXEMIA SYNDROME

This is complex in its etiology, as well as in its nosology. Anything that interferes with the caliber of the gut, or with the free passage of intestinal contents through the tube, results in a difficult passage of the bowel contents along the intestinal canal—Obstipation.

This may be a ptosis, or displacement of the gut at some point, a kink, abnormal sagging of suspensory structures, or dislocation of some part of the tube. This, together with abnormal dryness or lack of lubricating mucus, due to disturbance of the intestinal mucous glands, results in stagnation of the current, stoppage in many instances, a damming back of the current,—stasis.

As a result of these influences, opportunity is given

for increased bacterial or chemical action, the production of an abnormal amount of toxins of unusual virulence, irritation, and disturbance of the filtering or protective action of the mucous membrane and resulting absorption of increased quantities of poisonous material—Autotoxemia.

A result of so many factors working more or less interdependently is the establishment of the syndrome,—a complex group of many symptoms,—that may simulate almost any disease or diseased condition met with in medicine.

Furthermore, these conditions, if allowed to go uncorrected, may, and often do, aggravate or cause serious or even fatal disease.

The ideal treatment for such conditions is lubrication. The ideal intestinal lubricant is Interol because it comes close to Nature's own lubricant,—mucus,—in that it lubricates without stimulation, irritation or enervation. Being non-absorbable, it lubricates "all the way." On account of its characteristic "*lubricating body*," it efficiently mixes, spreads, and clings in the intestinal tract, and unless too much is administered it does not separate from the forces it lubricates and keeps soft. It does not "ooze," per se.

In pruritus, even in severe forms of genital, anal, diabetic, eczematous itching, K-Y Lubricating Jelly in a great majority of cases, will bring relief, or at least grateful alleviation.

To anoint the skin in these conditions, K-Y Lubricating Jelly is not only effective, but convenient and economical, since it can be used without staining or soiling the bed clothes or the patient's linen. If the part is washed before each application, the best results are obtained.

Minneapolis Clinical Laboratory

Oldest in the Northwest

N. W. Nic. 3690 410 Syndicate Bldg. T. S. 33 117

We make Auto vaccines from discharges
or the blood

Wassermann Test - - - \$5.00

Serum Test for Gonorrhea, \$5.00

Serum Test for Tuberculosis, \$5.00

HENRY L. ULRICH, M.D., Director

Private Maternity Home

For Women before and during
Confinement.

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THE JOURNAL-*LANCET*

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, MAY 15, 1917

No. 10

THE OMENTUM: ITS PHYSIOLOGIC VALUE AND THE NEED OF ITS PRESERVATION*

BY CHARLES H. MAYO, M. D.
ROCHESTER, MINNESOTA

The readiness with which the great omentum, either in part or in whole, is sacrificed in abdominal surgery, especially in colectomy, seems to call for an occasional word of appreciation of the value of this wonderful structure.

The omentum first appears in the lower vertebrae. It does not exist in fish nor in birds generally, but is found in birds of prey, undoubtedly as a protective organ, preventing by its soft pad the piercing of the intestines by spicules of bone in the food remnants they contain. In man the great omentum is attached to the greater curvature of the stomach and hangs down as a fold over the intestines, the under side of the fold being attached to the transverse colon at a level nearly as high as the stomach. Occasionally the right fold may be attached to the gall-bladder. In some animals the attachment to the colon does not occur, as in the dog, cat, rabbit, and pig. Vesalius believed that the transverse colon was supported by the omentum as a ligament; and his influence still affects some surgeons, who hold that ptosis of the transverse colon is a disease condition, and they advise surgery, not only for mechanical relief, but for the benefit of varied mental, nervous, and physical complaints.

De Renzi and Boeri, Pirone, Crouse, and others believe the function of the omentum is somewhat like that of the spleen. In structure its peritoneal layers and cellular tissue, with many vessels capable of great distention and

storage of blood, numerous glands, and large lymph-channels embedded in and traversing its fatty structure, indicate that it is an organ of extensive absorbent capacity, and probably absorbs more through the blood-stream than through the lymph-channels. The fat seems to be deposited quickly, and is as quickly given off. Without it the omentum may be quite insignificant and, with it, it is often very large, weighing several pounds. When the lymph-channels are obstructed above the omentum, they are shown to be numerous and of great size. Tests which were made to eliminate the lymph-flow by tying the thoracic duct, and which were supposed to indicate that the bulk of absorption is hemic, were considered imperfect or inconclusive in their results, as, according to Crouse¹ the major part of the lymph return is to the right lymph-duct by the right-lung and anterior mediastinal route.

Posture is not so potent a factor in the absorbing power of the omentum as formerly believed. The Talma-Morrison operation is of value in certain cases of ascitic accumulations within the abdomen, since it furnishes expansile drainage plugs; the peritoneum, being perforated from within out, by tags of omentum, leads drainage to a rich absorbent area just outside of this encapsulating structure.

While the omentum does not have the power of automatic motion, it is so readily moved about by respiration, intestinal movement, and chang-

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

1. Crouse, H.: The Omentum: Its Embryology and Histology: Its Physiological Uses. Bulletin, El Paso County, Texas, Medical Society, 1915.

ing abdominal pressure, that it almost seems to have a sense of adjustment. For this reason it is often found where wanted, attached to, or surrounding, by walling off, so to speak, infectious processes in the abdomen. It holds a high percentage of phagocytes of the defensive repair-type, and, unlike other areas, does not require the presence of structural infection slowly to develop or gather the phagocytes. The omentum is always ready with its protective army. In time of need there is a quick exudate of lymph and adhesions of omentum. Pirone and Heger show that with the loss of the omentum the main phagocytic power of the peritoneal cavity is lost.

Today the trend of opinion is that cancer is a manifestation of some form of infection; if this is so, the infection must be of a bacterial type which is non-irritating to the omental cells. Adhesions of the omentum to cancer areas rarely occur unless there is a secondary infection or perforation or impending perforation. Once attached to cancerous areas in the presence of general abdominal carcinosis or carcinomatous fluids the omentum rapidly succumbs to cancerous infiltration.

The omentum makes hernia manifest by its insinuating entrance into peritoneal pockets in the lower abdomen. Femoral hernia is undoubtedly due to the drawing out of peritoneum through the femoral ring by traction of attached preperitoneal fat. The omentum may not early reach to the opening or may not find the sac opening ready, but, ultimately, it becomes its first occupant. The same is true of those small peritoneal pouches along the cord structures in the male or the round ligament in the female,—small potential hernia in which the omentum becomes the dilating agent.

Persons who have had abdominal operations, and still have abdominal pain or later develop a new abdominal pain, nearly always are told that they are suffering from adhesions due to the former operation. The disease for which the operation was performed is often not considered. So-called adhesions are not of infrequent occurrence: a goodly percentage of people have them. The peritoneum is a thin layer of cells not fitted to repair, like the skin with its several layers; and adhesions readily occur, from injury or infection; in fact, this is a factor of safety against perforation and infective damage, and is constructive rather than destructive. In cases in which secondary or tertiary operations for adhesions have been performed and adhesions

found to fat areas, but none connecting naturally movable structures to firmly fixed structures, the cause of the symptoms will not be removed by separation of the adhesions. In such cases the surgical suggestion is made that further exploration is indicated in order to determine the presence of real pathology or properly to classify the condition as a neurosis requiring other lines of treatment.

In abdominal surgery along constructive lines the omentum is wonderfully useful. Suturing it in position to protect against adhesions or, at least, to make them harmless; covering abraded surfaces and adjusting omentum and fatty round ligaments by suture to keep the stomach or duodenum away from the denuded surface when they are seen in contact after cholecystectomy; wrapping the structure loosely around injured surfaces of intestine or those areas of poor vitality or freshly united bowel passing enterostomy tubes through the omentum, and fixing it by suture over perforations after their closure; covering the large yellow plaques of cancers of the stomach which are found on exploration to be inoperable, yet not obstructed, and which may blow open with the distention of stasis following simple exploration, are all very useful protective measures recommended by many surgeons. Free grafting of the omentum is a temporary patch which soon necroses and becomes absorbed after serving its purpose.

Great scrotal hernias of the intestines or omentum, as well as of the umbilicus, are often to be dealt with. Several surgical principles are involved. The abdominal contents which protrude may be removed if composed of only omentum, or returned within the abdomen if composed of intestine and omentum. The return of a large mass may be dangerous. When the mass has been extruded for a long time and has in fact almost lost the right of habitation, the abdominal wall becomes adjusted to its lessened contents. In such instances large hernias cannot be returned without increasing intra-abdominal tension and causing danger of obstructive stasis.

In all but emergency cases a week or ten days of preparation should be given,—for example, daily physic, light diet, and, above all, no exercise but rather rest in bed to secure relaxation of the abdominal wall. The omentum rapidly loses its fat, and it may then be safely replaced with the intestines. In removing portions of omentum it should be pierced with forceps, and, after crushing, ligated in sections.

To return to the original proposition of preserving the omentum whenever possible, at least, not ruthlessly sacrificing it; we must speak of the operation of colectomy. In cases of operable cancer of the transverse colon the omentum must be freely removed. If it is involved by the disease the operation will probably be palliative only. In some cases of colectomy we have found that the loss of the great omentum resulted in matting adhesions of the anterior layer of intestines with free movement of intestines behind this layer; which is apparently a protective measure. Such cases have been frequently noted in reports of complications resulting from colectomy, and are believed to be due to the loss of the protective influence of the omentum,—that is, loss of warmth, fat, aid in peristalsis, and maintenance of local circulatory balance. Colectomy, however, is now so often advised and performed for stasis, toxemia, and various hitherto and still incurable maladies, that lifting up the omentum and separating it from its colonic attachment with a sharp knife, rather than sacrificing it, has been suggested by Lardennois and Okinczyc. The same separation is made by Pauchet to reach the posterior wall of the stomach, the omentum being left attached to the stomach and free from the colon, as it is in some of the lower animals. A few ligatures only are required to control hemorrhage.

In colectomy we have preserved the omentum and nearly all of its blood-supply by a long incision, nearly the length of the transverse colon in the line of a longitudinal band. The incision is made through the peritoneum and muscle only. The mucosa readily peels out of its muscular bed by gauze dissection, leaving a few bleeding points, most of which are controlled by temporary gauze packs. At each side of the abdomen the longitudinal incision is converted into a circle around the bowel, the lateral colon on each side being wholly removed in the usual manner. The margins of the split outer wall of the colon are inverted into its raw surfaces and held by a few sutures. Right colectomy removes the greatest absorbent surface of mucosa, and, while preserving the omentum, is as effective as a more extensive colectomy in the majority of cases of surgical stasis.

DISCUSSION

DR. A. C. STRACHAUER (Minneapolis): The omentum is an agency of conservation. Its main function is that of protection. It is the abdominal surgeon's best friend. How marvelously does this lymphatic sponge or compress seek out mischief! It seems to have inside information whenever trouble is brewing, and "gets right on the job," wraps itself around inflamed areas, walls off and so confines purulent collections, backs up areas against slow perforations, blocks ruptured ulcers, plugs bullet wounds of intestine and viscera, plugs hernial apertures, so preventing the entrance of bowel, and is an all-round "friend in need."

The presence of an active omentum frequently means the difference between local and general peritonitis. In addition to its mechanical assistance, the omentum has great capacity for absorption and exudation. One of its main functions is that of leucocytogenesis. It is an abdominal transport carrying phagocytes. By wrapping itself around a damaged loop of bowel previously strangulated, the omentum sometimes nourishes the gut and mechanically prevents leakage. Large uterine fibroids and ovarian tumors which have outgrown their blood-supply, or have destroyed the same by torsion, will be fostered and sometimes be completely adopted by the omentum, from which structure the main or entire blood-supply will be derived.

One of the commonest and perhaps the most important post-operative functions of the omentum is its adherence to the wound in the abdominal wall. It has been my experience in re-operating abdomens previously operated on by me or other surgeons, the latter including some of the best in the land, to find the omentum adherent to the belly-wall scar. This is, I believe, the rule. It is my opinion that as surgeons we should see that the omentum, following a laparotomy, overlies the intestines and that it is in such a position as to favor its becoming adherent to the wound.

These omental adhesions are beneficent, usually symptomless, and prevent the bowel from becoming adherent to the scar. Intestine adherent to a fixed point frequently produces obstruction.

A raw area should never be left in the abdomen when it can be covered. Purposeful adhesions, while not ideal, are better than promiscuous adhesions, and the omentum can frequently be made to cover our tracks.

The ruthless sacrifice of the omentum is an evidence of thoughtlessness or ignorance. Every suggested means for its conservation is to be welcomed. Intestinal adhesion to the abdominal wound, with the resultant obstruction, has been one of the main post-operative objections to colectomy, including removal of the omentum.

The technic outlined by Dr. Mayo is an ingenious and definite improvement in that it saves the omentum and so prevents these undesirable after-results.

CLINICAL SIGNS IN THE DIAGNOSIS OF OBSCURE FORMS OF SYPHILIS OF THE NERVOUS SYSTEM*

BY A. S. HAMILTON, M. D.

MINNEAPOLIS

That an early diagnosis of syphilis is of the utmost importance is evident to every physician, but especially to those who have attempted to treat the condition, for it is in the early stages, if ever, that therapeutic measures may be expected to bring complete relief. In a certain number of cases, sooner or later, the poison of syphilis finds its way into the central nervous system, where it sets up a characteristic series of changes, both clinical and pathological. This involvement of the nervous system may occur immediately and in the very midst of treatment, or only after many years. It is essential, also, to bear in mind that no one part of the nervous system is ever affected alone, nor is any one process ever alone at work; and however localized clinical manifestations may be, it must always be assumed that the disease is widely diffused throughout the nervous system, and this fact explains the large number of physical signs and symptoms available for diagnostic purposes.

With the advent of the very valuable biological tests that have become available for the diagnosis of syphilis in the past few years, there has been a certain lessening of interest by many men in the clinical methods which we so long relied upon. Doubtless, this is explained largely by the tendency we all feel to resort to quick and more or less ready-made methods of diagnosis, but it is also due, to some extent, to the fact that certain clinical methods formerly much relied upon have been proven unreliable when tested by the more accurate biological methods and this has tended to throw discredit on other clinical procedures.

Let it be understood at the outset that what is here said in reference to clinical methods is in no way meant as a disparagement of laboratory tests. Admitting, as I do, the greater reliability of the biological tests in many cases, there still remains a certain number in which the clinical signs are so clear that we must accept the diagnosis of syphilis, whatever the biological tests may say. In addition, we must take into account the many times when diagnosis must be made quickly and without waiting for more or less

elaborate laboratory procedures, to say nothing of the instances where diagnosis must be made by men far away from laboratory centers or any possibility of an immediate biological test.

Under clinical tests, as distinct from biological tests, we may group the following:

1. The family history.
2. The history of the infection.
3. The early symptoms such as (a) headache, (b) malaise, (c) disturbance of sleep, (d) mental changes, (e) subjective sensory changes, (f) organic reflexes.
4. The physical signs such as (a) cranial-nerve disturbances, (b) sensory changes, (c) reflexes, (d) paralysis, (e) atrophy.

The Family History.—It is customary to inquire into the family history for instances of abortion, still-born children, and children that die early. While it is true that instances of this sort in unusual numbers may be accepted as evidence of some value of syphilis, it certainly cannot be accepted that the reverse, namely, the presence of large families of healthy children with no abortions, necessarily rules out syphilis. Many instances showing this will occur to anyone who has carefully investigated family histories. A very striking instance in my own practice is as follows: A man, aged 48, with a very well developed case of dementia paralytica was the father of thirteen children, seven by his first wife and six by his second. There had been no abortions in either marriage, and at the time the examination of the patient was made his second wife exhibited an exceptionally healthy appearing nine-months baby. There was a history of some sort of venereal infection on the part of the patient preceding the first marriage.

Another instance is as follows: One of our Minnesota Medical School graduates, now practicing in Alaska, stated in a personal letter to Dr. J. W. Bell that in his district five white men with dementia paralytica and two with tabes ascribed their infection to an unusually handsome Indian girl of the neighborhood. This girl was subsequently married to an Indian, and had a family of healthy children. Incidentally, this appears to be an instance of the special neurotoxin which has been invoked to explain the unusual number of nerve-involvements arising

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

from certain sources of infection (relation of infected Whites and Indians).

History of Infection.—It has long been customary among physicians to assume that a mere denial of a syphilitic infection on the part of the patient is of no value, but this has been denied by men of large experience, such as Erb, Nonne, and Head. Eliminating the cases where the mental condition of the patient, such as dementia paralytica, forbids the acceptance of any answer, whether positive or negative, it is probable that we get truthful responses in a large percentage of cases, provided the question is asked as a part of the routine examination and by a physician who has the patient's confidence and when other auditors are not present. It is especially important that the question be asked in such a way as not to imply censure on the part of the examiner. Due allowance must be made for the fact that the patient is absolutely ignorant of any infection in a considerable percentage of cases.—23 per cent in a group of 117 individuals studied by Head and Fearnside, and 36.5 per cent in a group of 63 individuals studied by Hirschl. As Nonne puts it, quoting from Ball's translation, "the conscious denial of an earlier infection from a patient who thoroughly understands the importance of a truthful answer, according to my experience, seldom occurs."

In determining the presence of an infection it is important to seek for the scar of the original ulcer, the glandular enlargement, and the pigment syphilide, as well as to inquire into the history of the primary and secondary lesions.

The Early Symptoms—

(a) Headache: In syphilis involving the brain and its coverings, headache is a very common and very severe symptom. It usually appears rather suddenly, is paroxysmal, lasting several hours, and is ordinarily most intense. Nonne and Head agree that too much stress has been placed on its nocturnal character. There is often a concomitant tenderness of the skull. If this tenderness is strictly localized it suggests gummatous formation. Nausea and vomiting are occasionally present, and even optic neuritis may develop. A young man, seen some years ago, following a blow on the head, developed a most intense paroxysmal headache with nausea and vomiting. As there was a legal element in the case the subjective symptoms were given less attention than they deserved. After two weeks of severe headache, the patient had three hard convulsions within twelve hours. A spinal punc-

ture gave every evidence of syphilis, including an extremely high cell-count. There were no other physical findings. Mercury relieved the condition completely for the time at least.

(b) Malaise: Often the patients complain of tiring with undue readiness and show indisposition for the ordinary tasks of life; and these cases are not infrequently diagnosed neurasthenia.

(c) Sleep: In the state of emotional instability which is often called neurasthenia, the patient may suffer from severe insomnia, but more characteristic are the attacks of apathy or impaired consciousness during which the patient falls asleep at any and all times, and is much of the time in a state of deep stupor, which may alternate with attacks of delirium.

(d) Mental Changes: Most cases of cerebral syphilis early show mental changes; and mild degrees of impairment of memory, attention, and concentration are common. The patient no longer attends to the details of his business; and in a general way changes of character, personality, and ability are very common. Thus a man who had had the reputation of being an expert in caring for electrical switchboards was discharged for carelessness and inattention to duty six months before anyone recognized that the change in his character was due to illness. Many a man has in this way, in a few months, destroyed a reputation for ability and integrity built up through many years of previous effort.

(e) Subjective Sensory Changes: One of the first conditions that drives the patient with syphilitic disease of the nervous system to the physician is the presence of pain or numbness, or both, but especially pain. That these so-called neuralgic or rheumatic pains do exist is widely known, but that they have a definite nerve-root character is less well recognized. It is a fact, however, that, whether we have root pains, and therefore irritation, or root numbness, and therefore root-destruction, we are dealing with a symptom which is very characteristic of syphilis, and also early in origin and therefore possibly within the period amenable to treatment. A good example of this consists in the area of pain and also hypalgesia or analgesia frequently seen on the ulnar side of the hand and arm in patients suffering from syphilis of the cord. The recognition of this root-pain as distinct from the pain referred from visceral disease, such as appendicitis, is very important, since many a pa-

tient has had his abdomen opened for supposed appendicitis or gastric trouble when the real condition has been a syphilitic root-pain. When the irritation has gone far enough to produce destruction of nerve fibers, there will be numbness as well as pain, and this numbness, especially if the analgesic area is larger than the anesthetic area, should clearly distinguish the trouble from referred visceral pain.

Organic Reflexes: Diminution or loss of sexual power and disturbances of the bladder and rectum, especially more or less complete retention of urine, may precede by some time the appearance of other signs of syphilis of the cord. When the chief difficulty complained of is loss of sexual power, and no other signs are present which enable us to make a diagnosis, we may often distinguish between functional and organic loss of sexual power by testing for the bulbo-cavernosus reflex. If this is lost we are probably dealing with an organic lesion of the cord.

Physical Signs—

Cranial Nerves: Involvement of the third, fourth, fifth, and sixth, and even the seventh, nerve is very common in syphilis of the nervous system. The classical Argyll-Robertson pupil is habitually looked for, but there are other clinical manifestations of perhaps equal importance which are often ignored. Pupils which are unequal, and especially pupils which vary in their inequality so that one is larger at one time and subsequently the condition is reversed; asymmetry of one or both pupils so that the aperture is no longer circular; and diplopia and squint occurring early, are all of very great importance, and are by no means limited to tabes dorsalis or dementia paralytica. Though rarely looked for, hypalgesia or analgesia of that portion of the fifth nerve about the tip of the nose is a common and very early symptom of tabes dorsalis, and is especially important, as no other condition, unless leprosy, can produce a similar picture, namely, a loss of pain-sense and little or no loss of touch-sense. The numbness may involve the entire face, but usually is limited largely to the tip of the nose and fades out in the adjacent area. Paralysis of the seventh is usually associated with other paralytic phenomena.

Sensory Changes: Subjective sensory changes have already been referred to, as also the objective change in the region of the fifth cranial nerve. The numbness of the feet and hands and the band-like sensation at the waist accompanying syphilis of the nervous system, are more or

less generally recognized, but there are certain special features associated with these sensory changes, and in addition there are other sensory changes which are very characteristic and therefore very important.

Attention has already been called to the area of pain on the ulnar side of the arm and hand. If this region is tested for sensibility with a pin it is frequently found hypalgesic or analgesic. Even in early cases of syphilis of the nervous system, and especially in tabes, there is found a zone of diminished or lost pain-sense about the chest and even down over the abdomen. The upper margin of this zone is the second dorsal segment and the lower margin is usually the nipple line, or slightly lower, though it may extend to the groin or involve practically the entire body. Above, the area of numbness often extends through the axilla to connect with the area inside of the arm. By starting over the neck and carrying the pin-prick down, and then by starting below the second interspace and going upward, it is easy to demonstrate the region of numbness, for, as the borderline is crossed in going from non-painful to painful areas, the patient will flinch sharply and show signs of distress even before he has time to speak of his sensation. In the feet and legs diminution of sensibility to pain is found even earlier than in the chest and upper extremities, but, for some reason, unlike the change in the arm and elsewhere, it is usually not of segmental distribution, but is greater at the most distal point and gradually grows less as one goes up the limb. In other words, the upper limit tends to run around the leg. Often when the disturbance is just beginning and the patient still distinguishes pain, the relative numbness can be demonstrated by comparing the supposed affected part with another area higher up and presumably normal. Before the pain-sense entirely disappears, we can usually demonstrate a phenomenon known as delayed sensation, so that a pin-prick, even though recognized, may not be so until two or more seconds after the prick has been made.

Quoting from Holmes' excellent article on the diagnosis of tabes dorsalis: "The diminution, loss, or alteration of sensation to pin-prick, in some or all of these areas, that is, the distal portion of the lower limbs, the thoracic zone, the radial [ulnar?] borders of the arms and especially the central portion of the face, constitutes the most common, the most definite, and the most characteristic sign of tabes dorsalis. It is fre-

quently present when the knee-jerks and the pupillary reactions are normal and before ataxia or other prominent symptoms develop, and is consequently the most important phenomenon in the diagnosis of the disease."

In addition to cutaneous hypalgesia or analgesia, there are other sensory phenomena of great importance. For example, in normal persons, heavy pressure on such structures as muscles, bones, testicles, and eyeballs is very painful, but in *tabes dorsalis*, particularly, this sensibility is often greatly diminished or even lost. Thus the muscles of the calf can be pinched to an indefinite degree with no discomfort resulting. The same thing is true of the *tendo Achillis* and also often of the testicles. This insensibility of deep structures to pressure is usually found, first and also most pronounced, in the distal portions of the lower extremity, consequently is best tested for in the calf muscles and *tendo Achillis*, but, in my experience, loss of sensibility in the testicles is almost equally common.

Other forms of sensibility are also involved, including touch and pain and sense of position; and disturbances of these constitute an essential part of the picture, but are not pathognomonic to the same degree as the pain disturbance. Thus touch is involved to a less wide and less complete degree than pain, though hypesthesia and anesthesia may be demonstrated in the feet and hands, the diminution growing less as we ascend the limb. Touch is also usually involved to same degree in the chest zone mentioned above.

Disturbance of temperature-sense is much like that of pain, but, being much more difficult to elicit with accuracy, is therefore less reliable as a diagnostic agent. Sense of position is less valuable than most other sensory tests, since it is often not involved until late in the illness. Romberg's test and other tests employed to show deficiency in the finer movements are really largely manifestations of diminution of sense of position. Movement of the fingers and toes up and down constitutes another method. The toes are ordinarily more involved than the fingers.

Reflexes: The examination of the superficial reflexes is of no great value, since in *tabes*, *dementia paralytica*, and even in other forms of syphilis of the nervous system, they may remain unaltered unless sensory loss becomes marked. The deep reflexes of the upper extremities also often remain unaltered unless we are dealing with cervical *tabes*. On the contrary, the patel-

lar and Achilles reflexes are ordinarily looked upon as being of great value, possibly of more value than they really are, since in *tabes*, for example, the patellar and Achilles reflexes may still be present when the disease has reached such a stage that it can be diagnosed by other methods, to say nothing of the frequency with which they are absent from other causes. Needless to say, these reflexes should never be accepted as being absent until they have been tested with the limbs in complete relaxation, and reinforcement has been added.

Paralysis and Atrophy: To paralysis and atrophy I shall refer but briefly. Paralysis is seen chiefly in meningovascular syphilis, and there appears as a very common symptom, usually in the form of hemiplegia or monoplegia, and it may be stated as a rule that apoplexy between the ages of twenty-five and forty, without heart disease, nephritis, or brain tumor, almost always means syphilis.

Very typical forms of progressive muscular atrophy occur in syphilis of the nervous system occasionally, but at least sufficiently often that a careful study as to the possible existence of syphilis should be made in each case. In five consecutive cases of progressive muscular atrophy seen recently by me, partly in hospital and partly in private practice, there being three cases of pure progressive muscular atrophy and two of amyotrophic lateral sclerosis, which is really a condition of progressive muscular atrophy, plus upper motor neurone disease, the biological tests for syphilis were all positive. Much oftener than the pure type of progressive muscular atrophy, we see instances of isolated muscular atrophy associated with other forms of syphilis of the nervous system, as, for example, atrophy of the intrinsic muscles of the hand in *tabes dorsalis*.

Transverse and diffuse myelitis of the cord, including various degenerations and pathological manifestations all occur as signs of syphilis of the nervous system, but, for lack of time, cannot be here discussed.

DISCUSSION

DR. W. A. JONES (Minneapolis): Obscure syphilis is a very complex matter, and when we speak of syphilosis we mean practically the same as a general carcinosis,—that is, it has the same significance, and we find it very difficult in both instances to make positive diagnoses unless we have other corroborative evidence.

I never have accepted, at least, in late years, the statements of the patient as to his exposure. He has deceived me so often that I am very suspicious, whether

he is a medical man, a business man, or a clergyman. We find that all are subject to the same environment, the same exposure, and the same end-results.

The majority of cases of nervous syphilis are manifested by a great variety of symptoms, so great that the diagnosis is very confusing. The variability in the symptoms is one of the chief things upon which we rely for a diagnosis, provided we find some one or two corroborative factors. Many of the pains and aches and sensory disorders follow the hysterical zone-line. They do not traverse the nerve trunks as they should. The painful areas are widely distributed. The motor disturbances are on one or both sides of the body, and the pains are of a neuralgic type, lancinating and sharp, often occur in the cranial nerve region—I think as often as in the spinal root region. Hence any one who complains of persistently recurring neuralgic pains should be under suspicion of being a leuetic.

I am impressed with the fact, as Dr. Hamilton has drawn out, that the nerve-root pains are very important, but I am still further impressed that there are a great many diseases which produce nerve-root pains which are not specific in origin. They may be due to spinal-column disease or to disease of the spinal cord or its environs.

I am not much impressed with the headache sign of syphilis, except where it is fully substantiated and where other symptoms are in accord.

I see a good many patients, as most of us do, of the nerve exhaustion type, who were formerly smilingly alluded to as neurasthenics. But many of our nervous exhaustion cases are unquestionably specific in origin.

The most difficult form to interpret is that of disguised syphilis, and that is often accompanied by mental disorders. They are, however, of a quiet type, they are rather stuporous than demented because they can follow a train of thought, they can advance an argument, and they have a recollection and a memory for events which the ordinary progressive dement does not possess. This is a valuable symptom in determining a general cerebral lues.

Among the various other diseases which occur in lues are the epilepsies and allied diseases of that character, which are worthy of very careful investigation, although but few epileptics as a rule show the specific elements.

I found I had a whole lot to say on this subject, but I am going to speak only for a moment about the hereditary type. Those I think are very often overlooked, and in most of the cases the interpretation of the family history is the main idea which suggests the specific origin, in the hereditary forms.

DR. C. R. BALL (St. Paul): I think Dr. Hamilton's statement with reference to the danger of placing too much importance in diagnosis on the serobiological reactions and neglecting the clinical examination is very apropos.

In Nonne's clinic in Hamburg, our search for evidences of syphilis did not end with the examination of the patient, but all the other members of the family, who could be assembled, were also carefully scrutinized for syphilitic stigmata. As a result of this, sometimes the key to the diagnosis was discovered outside of the patient in some member of the family. When congenital syphilis is suspected in children, this plan

of including the family in the examination is to be especially recommended.

The examination should not be confined to the nervous system alone. The nose and throat should be carefully examined for evidences of old lesions; also, the glans penis for evidences of a past chancre, the glandular system in the post-cervical, epitrochlear, the groin regions for signs of glandular enlargements in these parts. The skin should be searched for signs of old syphilis and the presence of leucoderma. It has been stated that 70 per cent of all cases of leucoderma are of syphilitic origin.

A good place to start the nervous examination is with the pupils. In many instances one finds the cue to the diagnosis either in the size, irregularity, inequality, or lack of response to light reaction. Sensory disturbances in nervous syphilis are interesting and important to work out, but it is better, if possible, to find assurance for the diagnosis in other symptoms, such as pupil disturbances, eye-muscle paralysis, and the behavior of the reflexes.

DR. C. E. RIGGS (St. Paul): Epilepsy occurring for the first time after the thirty-fifth year, is always suggestive of lues or brain tumor. Recently a patient consulted me who manifested all the symptoms of an essential epilepsy. For eighteen years she had suffered from petit mal. For the past two years these attacks had been replaced by those of major epilepsy. While she described no symptoms suggestive of any other form of trouble, yet, as a matter of routine, I made a careful neurological examination, and much to my surprise I found a loss of the deep reflexes and marked Rombergism. Upon careful questioning, she admitted having lightning pains and described a stomach trouble which had all the characteristics of a gastric crisis.

DR. A. C. STRACHAUER (Minneapolis): The cystoscopic findings in obscure and early cord lesions are of interest and diagnostic value. In addition to having examined a number of known cases, I have had three cases of absolutely unsuspected cord lesions in which the diagnosis was first suspected and made by the cystoscope. All three patients, one from the Medical Service at the University Hospital and two from the practices of Dr. Earl Hare and Dr. J. E. Hynes, were referred as cases of cystitis, tuberculosis being suspected in two of the patients. Frequent urination was the chief complaint. Dr. Hamilton later saw two of the cases and corroborated the diagnosis. The third case ultimately developed ataxia and incoördination.

The urinary bladder is frequently early involved in cord lesions, lack of force and power in urinating being an early complaint. Later in the disease, cystitis and overflow incontinence develop. The bladder is never completely emptied, and a small quantity of urine is frequently decanted off from the top. The stagnation invites infection and a resulting cystitis. The bladder in its effort to overcome the low power of expulsion, develops an hypertrophy of certain bands of muscles, giving a trabeculation, which, when once seen, is readily recognized. The appearance is that of a fretted vault of a Gothic ceiling. The trabeculation is similar to that regularly found in prostatism, except that urethral obstruction is absent. These early urinary symptoms, if appreciated, may lead the way to a correct diagnosis.

DR. HAMILTON (closing): One of the speakers in discussing my paper spoke of the fact that syphilitics may have families of perfectly healthy children. I must have been misunderstood if I was thought to have said the contrary. What I said was, that while it is generally understood that in families with syphilitic parentage there are many instances of abortion, still-born children and early deaths, yet it is a fact very commonly observed that to those who are undoubtedly suffering from syphilis, families of apparently healthy children may be born.

This point also brings up a matter which is an important one to me. When a patient comes to my office and I find him suffering from locomotor ataxia, and subsequently he presents all the biological phenomena of syphilis, I seldom know what to do as far as the wife and children are concerned. I have lately adopted the procedure pretty generally of insisting on biological tests being made of the other members of the family; but this presents a very delicate situation, for it is apparent that, if you once suggest the idea of syphilis to the family, they cannot get over it or forget it, and, even though the responses come back negative, you have implanted in their minds something which will give rise to very disagreeable thoughts on many future occasions. As an illustration of what may happen under these circumstances: Not long ago I asked five women to have their reactions taken. All were women whose husbands I had seen with syphilis of the nervous system. Of the five women, three gave negative responses, and two gave positives. Later, one of these women with a positive response told me of a child she had that had been ill for a long time, and this child also gave a positive response.

I feel that one ought oftener to insist on the test being made in members of the family other than the one actually under treatment, and yet I wish to refer to this situation as a very delicate and disagreeable one.

Dr. Strachauer spoke of the condition of the bladder

in cases of tabes. I should have liked to refer to that, as well as to several other conditions, but time did not permit, though I realize that trabeculation of the bladder is a very important sign in early diagnosis. In the cases which I have seen in connection with Dr. Strachauer, it has been an early and valuable phenomenon, but I have not information sufficient to enable me to determine whether it may not occur in other spinal-cord conditions, such as tumor, as well as in tabes.

Something was said of the gold-solution test, and I would like to say a word of my experience with that. It is a delicate test, but the trouble with me has been that sometimes it has reacted where clinically one did not expect it to do so, and when also all other reactions were negative, so that one is naturally suspicious of its meaning in any doubtful case. The typical parietic curve, for instance, was present four times in cases of multiple sclerosis at the University Hospital; and, if clinical methods of diagnosis are worth anything, these were cases clearly of multiple sclerosis. Furthermore, not only did they show the positive signs of multiple sclerosis, but they did not have any of the other clinical signs or biologic tests for syphilis. Another case of some interest is as follows: A woman died at the University Hospital a few days ago with a clinical diagnosis of tumor of the brain, based on a double-choked disc and other signs of brain tumor. A few days after admission, when the case was still looked upon as doubtful, for the patient had evidence of nephritis, as well as of brain tumor, and five children had died in succession shortly after birth, a spinal puncture was done with positive gold-curve and other negative responses. A post-mortem ultimately showed a tumor of the brain. These with other cases of more or less similar significance have caused me to feel that we are not yet in a position to interpret the gold-test reaction with certainty.

ARTIFICIAL VAGINA*

By J. E. ENGSTAD, M. D.

MINNEAPOLIS

The ovaries and vagina are developed from a collection of tubules of the ectoderm, which lies close to the mesoderm, forming that exceedingly complex body, the Wolffian duct. When fully developed, a cord of cells appears on the lateral side of each, lining a canal leading from the cloaca to the celom, called Müller's duct, the upper portion of which becomes the Fallopian tubes, the lower the uterus and vagina. Failure in development of Müller's duct is followed by malformation. The ovaries originate at the level of the mesomphors, descending in natal life; and in adolescence they are anchored in the pelvis.

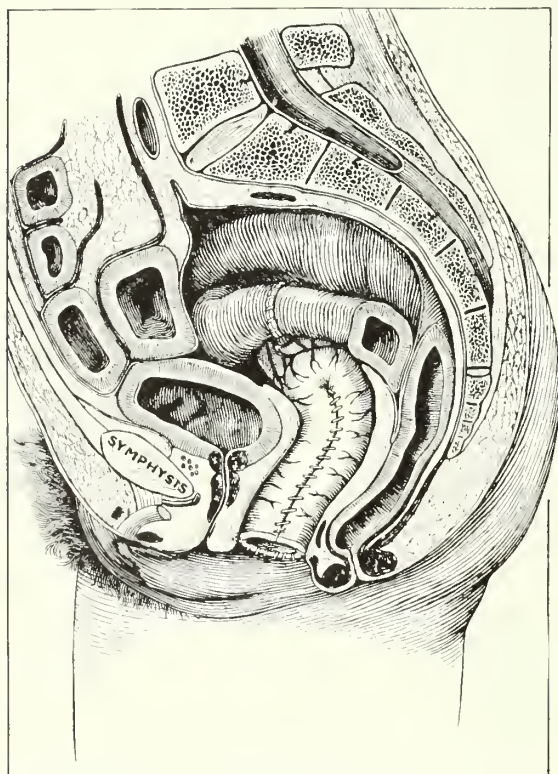
In malformations of the generative organs, however, they are usually anchored on the edge of the psoas muscles above the rim of the pelvis. The hilum of the ovary is attached to the peritoneum.

In one of my cases, the mesovaria and round ligaments were attached to the pelvis in the usual way, while in my last case they were attached to the inner edge of the psoas muscle. I have found the folds of Douglas unusually large and patulous in the absence of the reproductive organs. All of my cases have had normal pudenda; the labia majora and minora were normal, while the vestigial vagina varied from half an inch to about two inches in depth. The

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

patients have been womanly women, and above the average, both in intelligence and physical charm. They had all the moods and passions of a normal woman, disproving the theory of Kaussma and Nagel that these patients are true hermaphrodites.

Statistics of congenital absence of the vagina are not reliable because, undoubtedly, a considerable number of women so affected do not consult a physician; and, if they do, it is well known that only a minority of the members of the profession report abnormalities or defects met with in their practice. I myself have found nine in



my private practice. From my own experience I should judge that we might expect to find one case in about five thousand.

Innumerable operations have been devised for this defect, but, as most of them have been founded on principles of plastic surgery, and not on physiological or anatomical principles, disappointment has generally been the lot of both patient and operator. Painful contracted scar tissue and absence of moisture preclude the possibility that the organ as reconstructed will ever become a useful one.

As early as the eighteenth century operations were performed for this malformation, but they

were crude and not founded on anatomical conditions. The first improvement in technic was the introduction by Heppner, in 1872, of his plastic method, but not until Pfannenstiel, in 1898, devised a combined abdominal and vaginal operation were slightly better results obtained.

A later phase in the operative technic for procuring an artificial vagina was the utilization of a resected segment of bowel. To Russia belongs the credit of first suggesting this procedure. Sneguireff has recorded three cases, up to 1904, operated on by the method of transplanting the upper part of the rectum to form a sacral anus, and using the lower part to form the vagina. This operation is objectionable from anatomic, as well as esthetic, grounds. This method was improved by Popoff and Shubert, but it remained for an American surgeon to devise a rational operation for the repair of this physical defect. Dr. Baldwin must be given credit for being the first surgeon who originated an operation founded on both physiology and anatomy, which would, in a great measure, *repair* the defect caused by the absence of the organ. His method is founded on the principle of utilizing a loop of the smaller intestines, joining the distal serosa, cutting the ceptums, and bringing the ends through the perineum.

In my cases a few modifications have been made which add to the safety of the operation and to the end-results. In this malformation I have never found a vestige of the organ between the rectum and bladder. The ovaries have been unusually large and generally anchored near the kidneys and elongated, with large tubes ending in the peritoneum.

First Stage of Operation.—The most dependent loop of the jejunum is selected with the view of getting a loop from the lower part of the tract. With a pair of scissors the bowel is cut in two places about fourteen inches apart. The proximal and the distal ends are reunited by any method the operator may choose.

Second Stage.—Careful dissection is made through the perineum separating the bladder from the rectum, dissecting the opening as far as safety permits between the rectal and vesicle sphincters. The wound is then stretched, and the loop brought down like an inverted U after previously having been united by one or two rows of sutures along the distal surfaces. The serosa of the bowel is then stitched to the edges of the wound in the perineum after a clamp has been applied to the septum between the two segments.

This method may be modified in many details. I usually drain through the peritoneal opening, but this is a matter of technic which the operator has to solve for himself.

Obvious Dangers.—The mesenteric blood-supply to the segment must, under no circumstances, be interfered with. Undue stretching and trauma must be avoided; otherwise the part of the intestinal loop supplied with blood from the traumatized vessels will die. Only by the most careful dissection can the operator avoid traumatizing, sometimes even tearing, the anterior wall of the rectum, which, as we know, is rather friable in this region. The ends of the loop must not be subjected to pressure, or we may have sloughing, all of which will not only defeat the ends of the operation, but may jeopardize life.

The clamp is removed after twenty-four hours.

The Results.—I feel confident that in my last case a cursory examination by almost any physician would not have revealed to him that the organ was artificial. It was roomy and of natural depth, while its color was that of a pale vagina with normal moisture. For a few months the discharge from the isolated gut is quite profuse, but in course of time this will disappear entirely.

When a woman discovers that she has a physical defect of her generative organs, a shock is registered to her whole system. This psychic trauma may be delayed, but it will in time produce a shock that undermines the health of the unfortunate woman; and the resultant worry and mental agony will react on the physical well-being of the individual, affecting her health, and her lot is in many cases an early death from some chronic disease.

After the malformation has been remedied and the patient is assured that she may become a

happy and contented wife, her whole mental attitude is changed, and she becomes happy and contented, living a normal and useful life.

I may be permitted to add that the operation of restoring this organ is a most difficult one, and I cannot refrain from adding a word of caution to the average operator. This is a field of surgery in which the difficulties are so great that I for myself would rather perform the operation free of charge than to have the occasional operator undertake the task and fail, thereby discrediting it. I have tried it sufficiently to feel assured of its success if done with judgment and experience.

DISCUSSION

DR. D. C. BALFOUR (Rochester): Dr. Engstad has given a very clear description of what I believe to be the best method of constructing an artificial vagina. He has reminded us that former operations for this condition were almost invariably failures, regardless of the efforts made to keep the space open. The profession, therefore, should be indebted to Dr. Baldwin for devising such a valuable operation.

We have followed the rule that in attempting a new method it is wise to carry out the method as the originator has described it. We have, therefore, in the cases operated on in the Mayo Clinic performed the operation in three stages. I agree with Dr. Engstad that it is difficult, from an examination following such an operation, to show that any abnormality has been present.

I believe the indications should be sufficient to warrant the operative risk, and that the operation should be carried out as Baldwin has described it.

DR. ENGSTAD (closing): In my first operation I varied from my present method by bringing the "bow" of the gut down into the perineum, after the two ends had been closed by sutures.

A large number of these women are oversexed. Whether this phenomenon is due to the very large ovaries we find or is psychic, I am not prepared to state; but, I believe there is a physiologic balance between the ovaries and the uterus, and in the absence of this organ, the former organs undergo hypertrophy.

NEW METHODS OF OPERATING FOR DIFFICULT HERNIAE*

By ARTHUR T. MANN, M. D., F. A. C. S.

Associate Professor of Surgery, University Medical School, Chief of the University Surgical Division of the Minneapolis City Hospital

MINNEAPOLIS

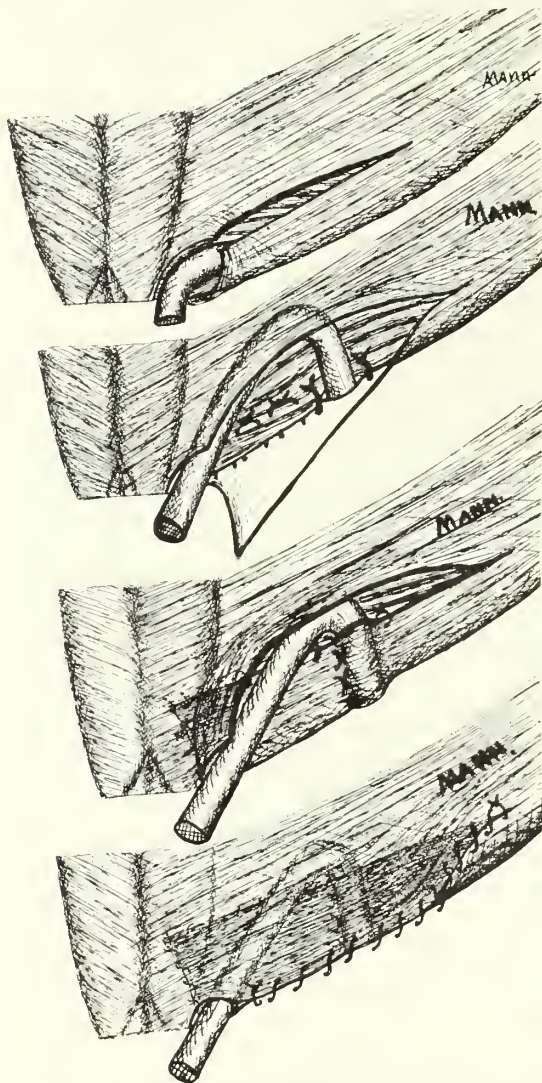
We may divide difficult inguinal herniae into those (1) in which the internal oblique and transversalis muscles and the conjoined tendon are thin and weak, and which must be reinforced in some way if operation is to give a secure closure,

and (2) those in which the conjoined tendon is absent, or nearly so.

The following method is a modification of the Bassini operation, which I wish to present. It is serviceable in practically all cases of repair for inguinal hernia. It is of special value in those cases with thin muscles or with defective or absent conjoined tendon.

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

The aponeurosis of the external oblique (Fig. 1) is split from a point well up on the external ring, outwards in the direction of its fibers, so that the lower flap will be three-fourths of an inch



Figs. 1, 2, 3, and 4. Modified Bassini operations.

Fig. 1. Incision through the external oblique, leaving the lower flap .75 to 1 in. wide.

Fig. 2. First row sutures tied as in first row of ordinary Bassini.

Fig. 3. The lower flap sutured over the upturned cord at the level of the internal ring and under the cord across the level of the external ring onto the sheath of the rectus, backing up the first line of sutures at the internal ring, the external ring, and the line of suture between them. The upper flap of the external oblique loosened to make room for the new canal for the cord.

Fig. 4. The upper flap sutured to Poupart's ligament over the cord to complete the canal.

to an inch wide, and can be used later to reinforce the first line of closure. The first row of sutures (Fig. 2) is the same as the first row in a typical Bassini operation with one or two pro-

tecting stitches above the cord to establish a close, firm ring. Before these stitches are placed, the finger should be inserted at the ring, and worked outward against the muscle until some of the

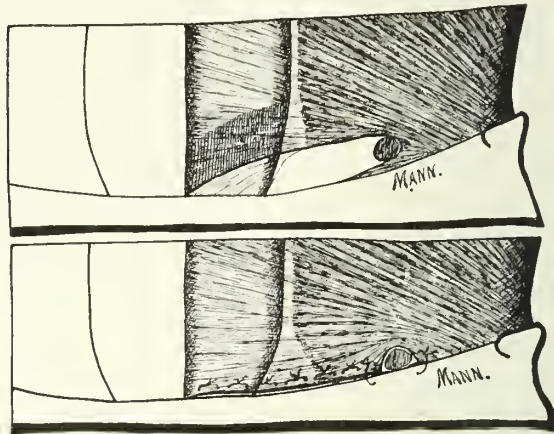


Fig. 5. Absent or defective conjoint tendon. The shaded area shows the portion of the rectus sheath separated from the muscle beneath and mobilized.

Fig. 6. The loosened rectus sheath brought down and sutured along the crest of the pubes, which brings the edge of the defective conjoint tendon so that it may be sutured to Poupart's ligament without undue tension.

thinner muscle bundles at the margin of the ring give way and the finger comes up against the thicker mass of the muscle attached to Poupart's ligament, which then becomes a firm mass for the support of the outer margin of the internal ring.

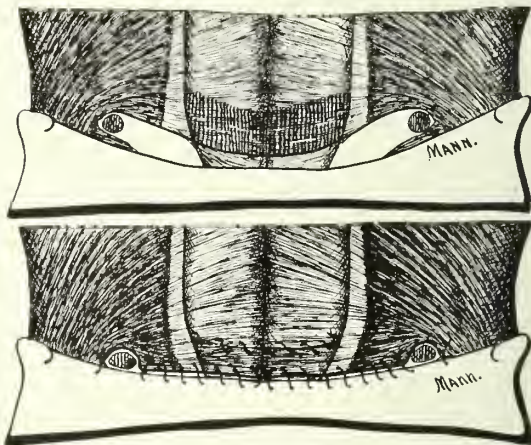
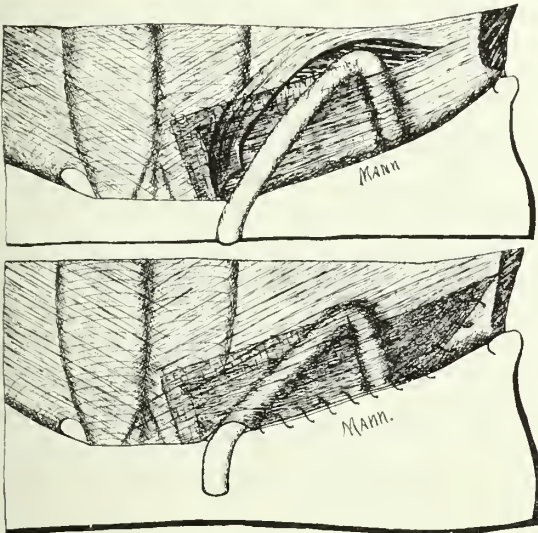


Fig. 7. Both conjoint tendons absent or defective. Shaded area shows the portions of the sheaths loosened from the recti muscles.

Fig. 8. The loosened sheaths of the recti muscles sutured down at the level of the crests of the pubes, bringing the defective conjoint tendons into position for easy suture to Poupart's ligaments, as in Fig. 6.

An easy sweep of the finger under the upper flap of the external oblique gives a space into which the cord may be laid, and forms the place for the new canal for the cord. The lower flap

of the external oblique (Fig. 3) is now folded upwards over the cord at the level of the internal ring, and its inner edge is drawn under the cord and fastened to the sheath of the rectus muscle well beyond the usual place of the internal ring. This backs up the site of the external ring with an extra layer of strong tissue. It backs up the entire first line of suture with the same strong flap which is already grown fast to Poupart's ligament and has its suture line nearly an inch above it so that there will be a broad scar attachment to the conjoined tendon and the internal oblique. When the proper sutures are inserted from the level of the lower margin of the internal ring upwards to the edge of the flap, it becomes



Figs. 9 and 10. The fascial transplant used in the modified Bassini operation shown in Figs. 1, 2, 3, and 4. Fig. 9. The transplant of fascia lata inserted from the level of the internal ring over the internal oblique and conjoined tendon and under the lower flap of the external oblique, and carried over well onto the corresponding layer of the rectus sheath. This would be over the suture line shown in Fig. 2.

Fig. 10. The modified Bassini, with its fascial transplant, completed by suture of the upper flap of the external oblique to Poupart's ligament.

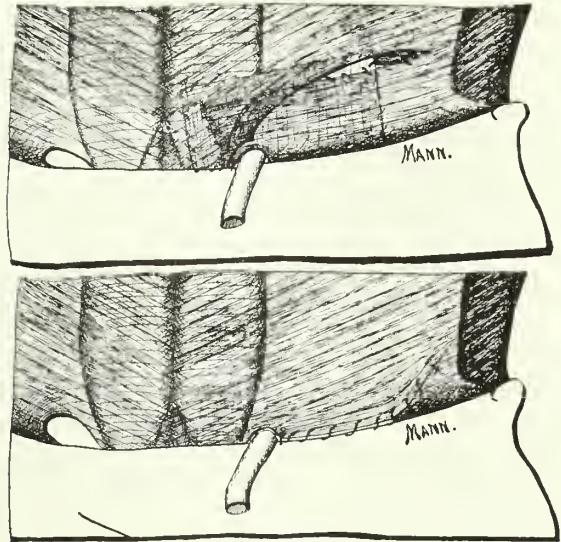
a strong support to the internal ring. This covers the three places of recurrence after operation: (1) the external ring, (2) the internal ring, (3) the suture line between.

The operation is completed (Fig. 4) by suturing the edge of the upper flap to Poupart's ligament over the cord to establish the canal. The size of the external ring is established by the nearness of the last stitch to the cord.

To this operation should always be added (1) the suggestion of Halsted to use the cremaster muscle when it is of sufficient strength to add to the security of the operation, and (2) the suggestion of Connell to suture the transversalis

fascia. This second suggestion is only occasionally of value. I followed some twenty-one dissections of the transversalis fascia and found it a little thicker than twice the peritoneum in only two. In my operative work, I have found it so in only three cases that I recall, and then I used it.

Some years ago, Drs. M. L. Harris and A. E. Halstead, before the Western Surgical Association, called attention to the occasional absence of the conjoined tendon. I am convinced that this occurs more often than has been realized. The absence of the conjoined tendon invites a hernia. Rupture of the conjoined tendon is one of the



Figs. 11 and 12. The fascial transplant used in the modified Ferguson operation.

Fig. 11. The transplant sutured into place over the first line of stitches above the internal oblique and conjoined tendon and well onto the corresponding layer of the rectus sheath. This in turn is covered by the lower flap of the external oblique (corresponding to the modification I have given for the Bassini operation).

Fig. 12. The operation shown in Fig. 11, completed by suture of the upper flap of the external oblique to Poupart's ligament.

quack methods of producing a hernia to avoid military service. On the other hand, a large hernia of long standing may so press against the edge of the conjoined tendon that it atrophies, is pushed up, and becomes defective and more or less absent.

When this condition is present it is not usually recognized. The usual operation is done. This drags the remnant of the conjoined tendon down quite a distance. The scar at the inner stitch is at a point of great tension; and under the constant strains of the abdomen it is quite apt to give way gradually with a recurrence of hernia at that point. To meet the defect in the con-

joined tendon when it occurs, I have taken an idea from my experience with ordinary transverse abdominal incisions.

Figs. 5 and 6 give the plan of operation. The remnant of the conjoined tendon runs into the tissues of the anterior sheath of the rectus muscle. The sheath of the rectus is loosened from the muscle for a sufficient distance (Fig. 5), and is brought down and sutured along the crest of the pubic bone. This brings the edge of the defective conjoined tendon into position so that it can be sutured to Poupart's ligament (Fig. 6), without undue tension opposite the internal ring, making it much less likely to pull away at this point and cause a recurrence of the hernia.

When there is a double defect (Fig. 7) the

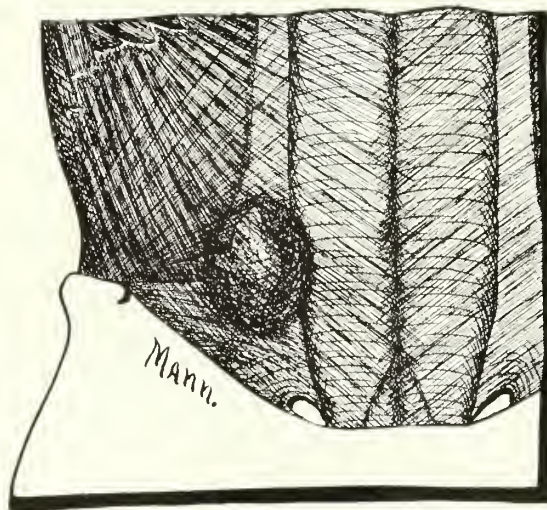


Fig. 13. A post-operative ventral hernia, with separation of the scar and a split in the internal oblique and transversalis muscles.

sheaths over both recti muscles should be loosened. They can be cut across at the level of the edge of the conjoined tendons, and the upper flap brought down to the crests of the pubic bones over the lower flap, with one row, usually with a double row, of sutures. (Fig. 8.) If preferred, the sheaths need not be cut across, but may be drawn down so that the dotted line is sutured to the crests; and the fold produced in the lower portion can be sutured to the surface of the sheaths with a second line of stitches. Either method brings both defective conjoined tendons into proper position for suture to Poupart's ligament. The remainder of the operation may be completed in the usual way with a modified Bassini, a regular Bassini, or a Ferguson. The modified Bassini would be the strongest method.

When the tissues are thin and do not promise

a sufficiently strong wall to give a permanent cure in any of the difficult types of hernia, it is perfectly feasible to incorporate a strong fascial transplant. The tough iliotibial band of the fascia lata in the thigh, is usually the best for this purpose. I have transplanted this or other fascia or tendon tissue in experimental cases fifty-two times, and have used the fascial transplant in hernias in human cases eight times, sixty transplants in all. If the technic is clean, the fascial transplant will always live. It is surer than the

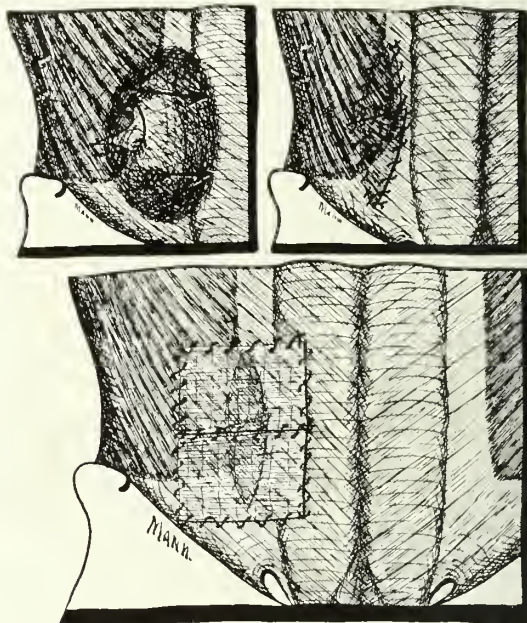


Fig. 14. The arrows show the method of repair of the hernia in Fig. 13.

Fig. 15. Flaps sutured as indicated in Fig. 14.

Fig. 16. Transplants of fascia lata sutured into place over the repair shown in Fig. 15.

bone-graft, and as sure as the transplant of fat.

The ease with which tissues may be transplanted depends upon the simplicity of their blood-supply. The more complex the blood-supply, the more difficult to make a successful transplant. In fascia we have a tissue with a simple blood-supply, a tissue which, when transplanted between living tissues, can take up sufficient nourishment from the lymph in which it is constantly bathed to continue to live until new blood-vessels grow into it from the surrounding tissue, and make it an integral part of the area in which it is placed. In experimental cases I have even placed one transplant over another in two layers, and both layers have always lived.

In the modified Bassini operation, which has already been shown you, I use them in the following manner. Fig. 9 shows the first layer of

stitches completed, and over this is placed a strip of the strong iliotibial band taken from the thigh, an inch and a half or two inches wide and long enough to reach from the inner ring across the site of the external ring and well onto the anterior sheath of the rectus muscle. This is fastened into place moderately on the stretch, and with care to insert the stitches near the internal ring in such a way that the stretch of the fascia at this place will greatly add to the strength of the internal ring. The lower line of stitches fasten this edge to Poupart's ligament. When this transplant grows into place, it strengthens materially the three places of recurrence of a hernia,—the internal ring, the site of the external ring, and the suture line between.

Fig. 9 also shows the lower flap sutured into place over the transplant, which again strength-

repaired, a case on the University side of the City Hospital. This shows a vertical scar outside of the semilunar line, in which the scar has spread widely and which shows also a split with spreading between the fibers of the internal oblique and transverse muscles, which here run nearly in the same direction.

This was repaired (Fig. 14), first by folding the lower lip of the split in the outer flap over the upper one with a double line of stitches (Fig. 15), and then drawing the inner flap under the outer one, also with a double row of stitches (Fig. 15). To reinforce this two strips of the strong iliotibial band from the thigh on the same side were fastened over it transversely, on the stretch (Fig. 16), so that the pull would come in the direction of the fibers of the fascia. These were each about two inches wide and three and

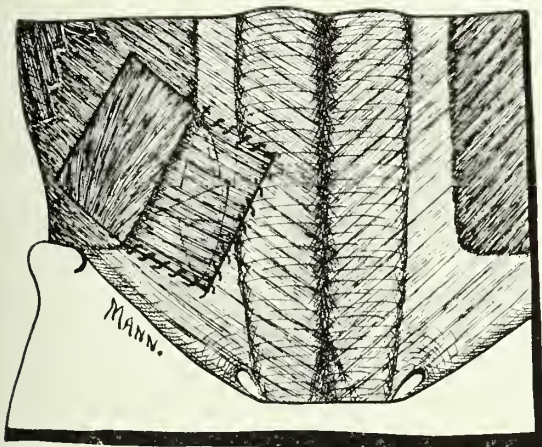


Fig. 17. Another method which might have been used to cover the repair shown in Fig. 15. This represents a flap cut from the external oblique muscle, and turned downward and inward across the repair shown in Fig. 15.

ens these three places of recurrence, and places the upper line of sutures at a distance from Poupart's ligament. Fig. 10 shows the operation completed with the new canal under the upper flap of the external oblique. Fig. 11 shows the use of the transplant in the Ferguson operation. Here the transplant and the lower flap both surround the cord firmly at the site of the external ring. The operation is completed by suture of the upper flap of the external oblique to Poupart's and snugly about the cord at the external ring, as shown in Fig. 12.

Some of our most difficult problems occur in the repair of old ventral herniæ which have occurred after some of the abdominal incisions, especially those which have been drained or septic. Fig. 13 shows one of the recent ones I have

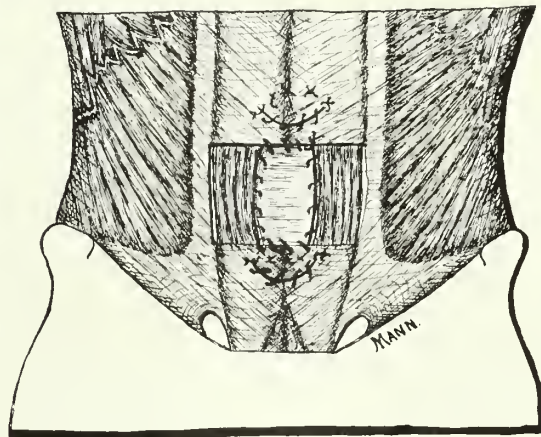


Fig. 18. A ventral hernia too wide for ordinary methods of suture repaired by flaps of the rectus sheath on both sides, cut at the outer margin of the sheaths and straight across to the inner margins. The left rectus sheath is turned across the opening and sutured to the opposite sheath along the edge of the rectus; and the other flap is turned over this one and sutured to the sheath along the edge of the left rectus muscle. The small hernia above and below is repaired by the usual upper and lower flap method.

one-half inches long. The superficial tissues were sutured above them to complete the operation.

Instead of using a transplant, the external oblique or the deeper muscles may be loosened and either overlapped, slid at one end, or folded over, in various ways, to reinforce the repair. Fig. 17 shows one method which might have been used in this case. The external oblique might have been cut, and the flap folded inwards and downwards across the line of repair. This may have been a good closure, but I thought the fascial transplant would be better because muscle tissue cut away from its nerve supply and

thrown out of active use, undergoes fatty degeneration and loses its strength.

The following pictures show the method employed in one of the most difficult cases of my median ventral series of repairs. This also was a case on the University side of the City Hospital. Here (Fig. 18) we had a woman with the umbilicus removed and a scar almost from the xyphoid to the symphysis pubis, the result of three operations, the first two of which were for conditions she did not know and the third an unsuccessful attempt to repair a large hernia which had developed in the scar. She came in with a mild strangulation the size of a small grape-fruit, and with a small hernia above and one below. After reduction of the large hernia,

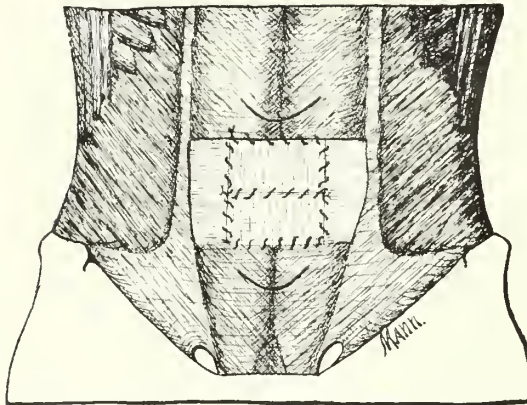


Fig. 19. Two strong transplants of the fascia lata sutured slightly on the stretch across the repair shown in Fig. 18.

a fist could be thrust into the abdomen between the recti muscles through the inverted sac.

At operation the distance between the recti muscles was three and a half inches wide and the vertical diameter four inches. The small herniæ were slits in the aponeurosis, and gave no trouble. They were repaired by an upper and lower flap in the usual method of repairing an umbilical hernia. In the large one the distance between the edges of the recti was so great and the abdomen so tight that I felt the sutures from side to side would cut through with a sure recurrence of the hernia. I cut flaps in the external sheath of both recti hinged at the inner margins, and in one place included a little of the external oblique. The right-hand flap was folded across the opening, and sutured to the opposite sheath along the edge of the rectus; and the left hand flap was turned over this one, and sutured to the sheath along the edge of the left rectus. This narrowed the distance between

the recti somewhat. Suture of the superficial tissues over this completed the operation.

After repair was well under way the repair felt thin, and I suggested a second operation with fascial transplants to make it firm. This she accepted, and about two weeks after the first repair (Fig. 19) I opened down to the sutured flaps, and placed two transplants, three inches long and two and a quarter wide, from the ilio-tibial band of the right thigh, transversely across the previous repair in the direction of the abdominal pull, and moderately on the stretch. She had a firm result when I saw her two years later.

Transplanted fascia should always be put a little on the stretch. If it is not on the stretch it degenerates and is replaced by connective tissue. If it is placed on the stretch, it retains its strong white fibrous tissue practically intact.

DISCUSSION

DR. ARNOLD SCHWYZER (St. Paul): Dr. Mann has given us good, practical advice; and he demonstrated that it needs a certain degree of ingenuity and adaptability to the individual conditions of each case in the more complicated and large herniæ. First, his procedure of diverting the course of the cord upward and away from the line of suture of the canal, appeals to us at once as an improvement where there is danger of too weak a wall. In his pictures it looks as though he cut flaps from the upper and lower pillars. This I should not consider as good practice, because it would be weakening the inguinal area. In a normal individual these fibers are very tense. However, from Dr. Mann's explanation I infer that he does not cut the pillars transversely, and that the drawing was probably only thus made to illustrate the better his doubling of the fascia.

I heartily agree with Dr. Mann in his statement that a fascia flap readily heals in. If we just think of this splendid material, we probably will use it more frequently. It is pliable and firm, and seems to me preferable to the filigree. In abdominal herniæ I always first try to get the original edges together. We can practically always do this, though it often requires quite a good deal of force. Through-and-through silk-worm sutures, which enter on one side of the wound and after looping leave again at the same side, and which are tied over a roll of gauze, may be used to withstand much pulling. As long as we can go far out from the edges into the healthy areas and get hold of solid fascia, we are allowed to use tension. We may unite a more superficial layer, say the obliquus externus, by a similar suture from the other side, which breaks the line of union and which thus strengthens the sewed area.

By all means Dr. Mann's paper well illustrates that one must adapt oneself to the circumstances, and Dr. Mann gave us a good illustration how this can be done.

DR. ARTHUR A. LAW (Minneapolis): In the last four years we have exhibited the use of fascia lata transplants into the abdominal wall in the presence of great umbilical or postoperative ventral hernias fourteen times.

These cases usually occur in very fat women, who

have a marked diastasis of the recti muscles, with thinning from over-stretching and a fatty infiltration of the aponeurosis, which militates against the chances of a permanent cure with any of the operations heretofore suggested.

In these selected cases we have taken large grafts from the fascia lata, and with these grafts have re-enforced the abdominal wall, after having done the primary imbrication by the well-known Mayo method.

We know by experimental and clinical observations, according to the law of Roux, if a transplant is given specific work to do, that, under the stimulus of those demands, it retains its identity if sufficient demands are put upon it. Whether or not fascia lata introduced into the abdominal wall is called upon to do enough work to make it retain its identity as fascia lata, we do not know. We do know, however, that if it loses its characteristics as fascia lata, it becomes ultimately converted into a dense sheet of connective tissue, which in itself re-enforces and supports the weakened abdominal wall, and by so doing answers the purpose for which it is intended. While we cannot say positively that fascia lata in the abdominal wall is under enough stress to make it remain fascia, we do know from clinical observations upon transplants which are under no stress that they are converted into connective tissue. This was illustrated by a case where a tremendous exostosis springing from the lower and anterior aspect of the humerus underneath the brachialis anticus muscle reached across, and bridged and locked the elbow-joint. When this was removed we covered the denuded bone with a strip of fascia, hoping it would act as a limiting membrane, and take the place of periosteum. This it failed to do, and one year later the patient returned with a recurrence of this exostosis, the fascia having failed to keep the osteoblasts where they belonged.

In re-operating on this patient the fascial graft was found tremendously hypertrophied; it had lost its characteristics as fascia lata, and had been replaced by connective tissues. In the later operation we transplanted periosteum from the antero-medial surface of the tibia, and there has been no recurrence of the growth.

Only in two instances have we felt called upon to transplant fascia in inguinal herniæ. Generally, when the conjoined tendon is inadequate, by the trap-door

method suggested by Halsted, we are successfully able to re-enforce our inguinal repair.

Fascia lata belongs to the connective-tissue group which has a simple histological structure and low vascularization; therefore it lends itself as readily to auto-transplantation as any of the other tissues belonging to this group.

We have entirely reconstructed all of the extensor tendons of the forearm from the middle of the arm to the knuckles, using fascia lata. We have as well made an annular ligament for these tendons from fascia lined with fat. After the suggestion of Dr. C. H. Mayo we have transplanted fascia into the head to take the place of the loss of dura, due to a cystoid scar. Here with a layer of fat on the under surfaces of the fascia and next to the pia, we have repaired the dural defect. The fat adjacent to the pia has apparently prevented the re-formation of adhesions with their sequence of Jacksonian epileptiform manifestations.

We have utilized fascia successfully in neural tubulization, bridging a defect of three inches of the nerve, which ultimately regenerated through the patent fascial tube.

Lewis has shown experimentally that fascia lata survives in the presence of sterile bile when it is used to reconstruct the common duct.

It has been used successfully in the reconstruction of the ureter. In both instances, however, it has been found to degenerate into connective tissue; and, where it is used in the ureter, it, of course, prevents the normal peristaltic wave, which travels down the ureter and hence usually is followed by a secondary hydronephrosis.

McArthur tells us that in his clinic this ureteral fascial transplant has been found to degenerate into real bone.

We have experimentally drained the lateral ventricles with fascial tubes. These tubes remained patent, and fulfilled their intent.

We have found that fascial grafts in the presence of chronic infection, show a degree of resistance to that infection which is significant of the establishment of a certain amount of immunity; therefore, their survival should not be despaired of in mild infections.

THE DUTY OF PHYSICIANS AND THE ENFORCEMENT OF THE LAW IN MINNESOTA IN RELATION TO REPORTING BIRTHS

By GERDA C. PIERSON

Director, Division of Vital Statistics, Minnesota State Board of Health
SAINT PAUL

There has been, and apparently still is, much misunderstanding on the part of certain physicians in Minnesota concerning the requirements of the law as regards the reporting of births. We find it to be a common mistake of many physicians, after attending a case, to simply sign their names on a blank birth certificate, and leave the latter with the parents, depending upon them

to complete the record and file it with the local registrar. This course does not follow out the requirements of the law. Section 4651 of the General Statutes of Minnesota for 1915 reads as follows:

SEC. 4651. CERTIFICATE OF BIRTH, BY WHOM FURNISHED. CONTENTS. The physician or midwife attending at the birth of any child, or, if there is no attending

physician or licensed midwife, the father or mother shall, *within ten days thereafter*, subscribe and file with the local registrar of the district within which the birth occurs, a certificate of birth specifying:

Place of birth, including state, county, city, village or town, with the street and house number, if any, or in lieu thereof, the name of the hospital or other private, public or state institution, if in such institution.

Full name of child. If the child dies without being named before the certificate is filed, enter word "Unnamed" with date of death.

Male or female.

Whether one of twins, triplets, or other plural birth, and the number in order of birth.

Legitimate or no.

Date of birth, including year, month, day and hour.

Full name of the father.

Residence of the father.

Color or race of father—as, white, colored, Indian, Chinese, or other.

Age of father at last birthday.

Birthplace of father; state or foreign country.

Occupation of father with a statement of the trade, profession or particular kind of work; or the general nature of the industry or business engaged or employed in.

Full maiden name of mother.

Residence of mother.

Color or race of mother—as white, colored, Indian, Chinese, or other.

Age of mother at last birthday.

Birthplace of mother; state or foreign country.

Occupation of the mother, with a statement of the trade, profession, or particular kind of work; or the general nature of the industry or business engaged or employed in.

Number of children born to this mother, including present birth.

Number of children born to this mother now living.

The fact of attendance and that the birth occurred at the time stated.

Date of making and address of the person subscribing.

If the child is one of a plural birth a separate certificate for each child shall be filed.

When the birth occurs in any lying-in hospital or in any private, public, charitable or state institution, without attendance by a physician or licensed midwife, the superintendent, manager, or person in charge shall make and file the certificate of birth.

If the birth occurs in any hotel, rooming or boarding house, or any private dwelling or apartment other than the home of the parents, the keeper or occupant shall immediately notify the local registrar of that fact. The local registrar shall then procure the necessary information and signature for a proper certificate of birth.

The attending physician or midwife shall deliver to the parents a blank for a supplemental report of the given name if the child is not named at the time of making the certificate of birth.

When a certificate of birth is filed without the given or baptismal name, the local registrar shall deliver to the parents a blank for a supplemental report of the name. Such supplemental report shall be made and filed with the local registrar as soon as the child is

named. If such report is not filed within thirty days from the date of birth the local registrar shall obtain such name by other means.

From this it will be seen that upon the physician devolves the responsibility of filling out the entire birth report (with the possible exception of the child's given name, which may not be known at the time), and filing the same *within ten days direct with the registrar of the district* (city, village, or township, as the case may be) *where the birth occurred*. The registrar in a city is the health officer; in a village, the recorder; in a township, the town clerk. Each city, village, or township constitutes a separate and distinct registration district, and the law requires that births and deaths be recorded in and reported from the registration district *in which they occur*.

In many cases where a birth certificate is left with the parents, it is not an uncommon thing for them to fail to fill it out and file it. If filled in at all, there is sometimes several months' delay in placing the report on record. We naturally feel that physicians know the importance of these records more than do the parents, in many cases. It is only in later years, when a certified copy of the record is desired, that its importance is brought home to the parents, or possibly, to the child, for the reason that a copy is needed for legal purposes.

We are often advised by physicians that their reason for leaving the blanks with the parents was that the child's name was not known. Under no conditions should the original record be held up awaiting the given name of the child. This point is fully provided for in the section of the law above referred to by requiring the physicians to leave a supplemental blank with the parents when the child's name is not known. We look to the physician to explain to the parents that the supplemental blank should be filled in as soon as the child is christened, and forwarded to the local registrar, so that the record may be made complete. The local registrar is required by law to forward to the Vital Statistics Division of the State Board of Health on or before the 10th of each month records of all the births and deaths which have occurred in his district the previous month. The supplemental reports can be sent in at any time later.

Inquiries often come to us from physicians and others concerning the reporting of still-births and premature births. One portion of section 4652 of the Vital Statistics law reads as follows:

In the case of a child dead at birth a certificate of birth having the word "Still-birth" inserted in place of

the name, and, also, a certificate of death, shall be made and filed with the local registrar, and a burial permit issued as hereinafter provided. The medical certificate shall be signed by the attending physician and shall state the cause of death as "Still-born" with the cause of the still-birth, whether a premature birth, and, if so, the period of uterogestation in months. Provided: that a certificate of birth or death shall not be required for a child that has not advanced to the fifth month of uterogestation.

Any case occurring after the fifth month of uterogestation is therefore reportable as a birth, and also as a death if the child is born dead or dies shortly after birth. Burial permits must be secured for such cases, as well as other deaths. This means, of course, that the death return must be filed promptly *before burial* in order to secure the permit. The burial permit is a receipt for the death certificate, as well as authority for burial.

Most physicians, undoubtedly, have knowledge of the birth- and death-registration area of states established by the Census Bureau at Washington. Minnesota has been in the death-registration area since 1910. The birth-registration area was not established until 1915, at which time the Census Bureau selected ten states for the test by requiring transcripts from them of all birth records for 1915. Minnesota was one of these ten states, and out of the number comprising the present birth-registration area, Minnesota and Michigan are the only ones west of New York and Pennsylvania. This is a record of which the State has reason to be proud.

When admission was gained into this group of states, *it was with the distinct understanding on the part of the Census Bureau at Washington that the law shall be enforced in every case where physicians fail to report, not only for failure to report at all, but for failure to report on time, namely, within ten days.*

This puts the State Board of Health in a position where there will be nothing to do but file complaints against offenders, if Minnesota is to remain in the birth-registration area.

For years we have carried on a very extensive correspondence with physicians through the state, bearing on their duties in this respect. There are some physicians, as might be expected, who apparently strongly resent our continually asking them to report births which we are advised have been attended by them, but for which reports are not on file. They state that they cannot be compelled to report without a fee. It has been demonstrated at various times that their conception of the law is wrong. It has been ruled by the Attorney-General that, for the reason that physicians

have certain privileges, such as exemption from jury duty, etc., the State can demand certain services from them in return.

A few years ago we had in the employ of this Board an attorney who spent his time in the field checking up irregularities of this kind. As a result many physicians were fined, and yet these men were those with whom we had had an endless lot of trouble and correspondence concerning their negligence in this respect. They had been pleaded with, urged to report, cajoled, and threatened—all to no avail. Time and again they had been warned that if they did not report their cases there would be nothing for this Board to do but file complaints against them. A record has been kept in this office for several years of those physicians to whom we are continually writing because they fail to report births, which puts us in position to know just who the offenders are. I assume it is but human nature that these men who persist in neglecting to comply with the law would resent any action brought by the State Board of Health against them in court, but, I am sure, a physician, if he would stop to give the matter a moment's thought, would realize that this small service on his part may mean a great deal to the child in years to come.

More and more, I am glad to say, the physicians throughout the state are beginning to appreciate that this is not a personal matter on the part of the Vital Statistics Division of the State Board of Health; that, if the records of births and deaths are to be made what they should be, there is nothing for this Board to do but continually follow up irregularities of which we have knowledge.

During the past year this office has received many requests for copies of records which are not on file. Many of these requests come about as the result of the situation abroad. With all passports now issued, the individual is required to furnish a record of his birth. Many people have been put to much trouble and inconvenience, as will readily be seen, for the reason that their births had not been recorded.

We realize that it is with no intention of evading the law that the physician fails to report a birth. The matter, for the time being, seems to him of small importance in the midst of a busy practice. We have found that those physicians who are in the habit of carrying a book of blank birth-certificates in their obstetrical cases are the ones who are seldom called upon to report the births occurring in their practice. In many cases the

mother is apt to come under the care of the physician several weeks and sometimes months before the birth of the child. Information can be secured from her during that period as to the names of parents, ages, birthplaces, etc. Further, at the time the doctor attends the case, there is usually time to secure the necessary data from some one in the house. The longer the physician waits to obtain the information called for, the more apt he is to forget to report.

Prosecutions are apt to begin at any time owing to an increased appropriation granted by the recent legislature. We therefore urge physicians who have attended cases during 1916 and 1917 to date, which they have failed to report, to file the records at once with the proper registrars. Blank birth-certificates in book form and supplementals will be furnished direct from this office upon request.

Surely, our aim to secure proper records of births and deaths for the state is not a selfish one. This should be apparent to anyone. It is a cause which benefits many. So let us not have to resort to prosecutions, with their attendant ill feelings. Let us all work together for the common good, and have reports filed promptly by physicians without so much urging and pleading on the part of the State Board of Health. To those physicians who have given us their co-operation in this work, we wish to express our thanks and appreciation. To those who have been negligent in the past, we make a final appeal to carry out the requirements of the law.

CORRESPONDENCE

THE NEW FEE-SPLITTING LAW IN MINNESOTA

TO THE EDITOR:

After a very severe struggle with our Legislature we finally succeeded in passing our bill "to prohibit the division of fees by physicians and surgeons."

We have a fairly strong hospital organization in Minneapolis and recently a State Hospital Association was organized, and this law has been unanimously endorsed by these bodies. I am a member of the Swedish Hospital staff, Minneapolis (surgical hospital, 165 beds), and our Superintendent is President of the Minneapolis and State Hospital Association, and through

these superintendents we expect a good deal in the way of enforcement of this law.

A copy of this law will be posted at the Hospital and the members of the staff will be expected to live up to same, if they desire to remain on the staff. This, in my opinion, will be one of the best ways of enforcing this law.

Respectfully yours,

C. J. RINGNELL, M. D.,
Chairman of Committee.

AMERICAN MEDICAL ASSOCIATION MEETING New York City, June 4-8, 1917

Minneapolis-St. Paul, May 10, 1917

To the Physicians of the Northwest:

The 1917 meeting of the American Medical Association occurs in a memorable year, and is to be held in the greatest city in the world. Great things will be told and done at this meeting; great men will be on the program; great will be the meeting's influence on the world; and a great attendance is already assured by the importance of the occasion and the enthusiasm of the profession.

The trip from the Twin Cities to New York will be both enjoyable and profitable, for more well-known medical men of this growing section of the country will get together than on any like trip in past years. The Transportation Committee have made very complete arrangements with the Chicago, Milwaukee & St. Paul Railway and the Baltimore & Ohio Railroad to take care of the party that will start from the Twin Cities; and no service in the power of these companies that will add to the comfort of the party will be overlooked.

Every member of the profession and members of his family are urged to make early reservations in the special cars for this trip, which should be made even though it requires large personal sacrifice, for it is well worth taking. New friendships will be found; old ones revived; and, best of all, enthusiasm will result from the personal touch with the great men and the great events of this meeting.

Any information desired, or number of berths desired reserved, can be obtained from the Transportation Committee, care Journal-Lancet, Minneapolis, or by applying to Mr. C. R. Lewis, C. P. & T. A., 328 Nicollet Avenue, Minneapolis; Mr. W. B. Dixon, A. G. P. A., C. M. & St. P. Ry., 365 Robert Street, St. Paul, or to Mr. H. C. Strohm, N. W. P. A., B. & O. R. R., 804 Metropolitan Life Bldg., Minneapolis.

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THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

W. A. JONES, M.D., EDITOR

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

MAY 15, 1917

TWO IMPORTANT EPIDEMICS

While it seems almost unnecessary to call the attention of our readers to the epidemic of cerebrospinal meningitis which is now prevalent, and to the epidemic of infantile paralysis which is very likely to come, too many warnings cannot be given, either to the profession, or to the people, of the necessity of recognizing these two conditions as early as possible and to forestall the spread of both.

Epidemic cerebrospinal meningitis is mainly a cold-weather epidemic; at least, Minnesota has been visited by more cases than usual the past winter. Infantile paralysis is the epidemic which appears after the subsidence of the epidemic of cerebrospinal meningitis, and is likely to develop, in fact has developed already in some parts of the state, at this early date. Up to the date of writing there have been 109 cases in Minneapolis, with 53 deaths, approximately 49 per cent. In St. Paul there have been 36 cases, with 13 deaths, and in the country there have been 51 cases with 24 deaths. This gives us a total so far reported of recognized cases of 195 in Minnesota, with 90 deaths. It is quite likely that many cases are unrecognized, and consequently all have not been reported. It is also true that a few deaths occur in which the patient is ill but a few hours, and

dies from a fulminating type of meningitis. This number of cases includes, of course, those who are treated and those who remain untreated; and it is very difficult at the present time to arrive at a positive conclusion as to the limitation of the disease or the possibility of its cure by serum therapy.

It is agreed by all workers who come in contact with cerebrospinal meningitis that a lumbar puncture should be the first measure in diagnosis, but it is in some instances impossible to do a lumbar puncture, and in many instances the physician in charge hesitates for fear of danger and not infrequently from inexperience. Under such circumstances the physician should not hesitate to send for a field man from the State Board of Health laboratories either to do a lumbar puncture or to assist him in the diagnosis.

Patients who complain of an acute, an intensive headache coming on abruptly followed in most cases by vomiting, which may be projectile or not, and who may have a convulsion or who exhibit muscular irritabilities and rigidities of the spine and neck, should be placed immediately upon the suspected list. Headache is most common, vomiting is almost equally so, but in many instances is not of the cerebral type. Muscular rigidity may escape notice, but, if great care is exercised in manipulating the limbs and back, the child will show more or less muscular resistance. Then, too, one must not be misled by the fact that the cerebrospinal fluid is clear on the first puncture, as it has been demonstrated in many instances that the second puncture on the following day reveals a turbid, cloudy fluid and contains the meningococcus. In all suspected cases that have a fairly clear clinical chain of symptoms, the lumbar puncture should be followed by the injection of the antimeningitic serum, and, preferably, the serum should be introduced by the gravity method and not forcefully injected, as is commonly done in the use of other fluids in the spinal canal. Occasionally a death occurs with an intraspinal injection, but such a result can be largely obviated by very careful introduction of the serum and also by introducing a little less serum than the amount of fluid which is taken out of the spinal canal. In children the Flexner serum should be used in small doses, about 15 c.c., and may be used daily for five or six consecutive days. In adults the dose should be increased to 30 c.c., and applied in the same manner and for the same number of days. Cases which are fulminating in form are not benefited by any method of treatment, as they

almost invariably die within twenty-four hours. Patients who have had cerebrospinal meningitis for five or six days are not often benefited by subsequent injections, although there should be no hesitation in using the serum.

The after-effects of epidemic meningitis are the various palsies that may occur,—ocular palsy, deafness, paralysis of some of the motor nerves of the face, and occasionally a motor paralysis of the extremities. Recoveries occur in a certain proportion of the cases after a long period of time,—weeks, sometimes months,—but when an epidemic exists, as it does at this time, improvement should begin very early if the patient is to recover.

There is no other method of treatment than the serum treatment that is of any service whatever. All ordinary medication, such as laxatives, warm packs, and warm baths, are helpful in the relief from the agony of the disease, but are in nowise curative, and, if the patient gets well, it simply shows that the resistance of the individual and the limitation of an acute infection played a part.

The one important fact which should be kept in mind is, that this disease is contagious, and reasonably close contact is the method by which it is transmitted; consequently all cases should be isolated under the care of a nurse, and the rest of the family should be kept from the patient's bedside until all the danger-points have passed. There is altogether too much laxity among a certain class of people in regard to this and other infectious or contagious diseases, and the people, as well as the profession, should be warned that isolated cases are safer while the cases that are frequently visited are likely to spread the disease. The Epidemiological Department of the State Board of Health has shown by its charts that cases occur in localities which are very near the original case, and in this way it differs from the infantile paralysis epidemic.

Lumbar puncture and injection of serum into the spinal canal are not difficult if one keeps the anatomy of the spine in mind, and has a sufficiently long and strong needle for the purpose of puncture and injection.

Infantile Paralysis.—Usually infantile paralysis becomes epidemic in warm weather, but already reports have come from the northern part of the state among the Indians showing that the epidemic has begun earlier this year than last year, and the probabilities are that many cases will be reported during the hot weather.

The onset of this disease is so familiar that it

hardly seems necessary to reiterate the symptoms, but any child that is taken suddenly ill with an increase in temperature with convulsions, vomiting, and lassitude, shows evidences of a cold or la grippe or a like disorder, and should be at once carefully examined for the existence of paralysis, and every physician should hesitate about his final diagnosis for a day or two or at least until the paralysis is evident before he gives his opinion. It has been frequently the experience of physicians in the cities and in the country that a child is sick for twenty-four or thirty-six hours, but is so uncomfortable that either the physician or the parents hesitate about disturbing it, hence many cases are unrecognized as infantile paralysis until the actual paralysis is found after the quieting down of the acute symptoms. Commonly it is then too late to do very much because, when the paralysis is already present and unless the case is an abortive or a very mild one, the damage has been done to the anterior horn cells. Children who exhibit this chain of symptoms should at once be given a laxative and a warm bath, either a sponge bath or a warm tub-bath, and the only remedy which has proven of much value is urotropin given in from one to fifteen grain doses, according to the age of the individual.

Infantile paralysis is not quite so contagious as epidemic meningitis, but it should be considered a communicable disease, and treated as such by the same methods of isolation and protection of the other members of the family. Indiscriminate visiting has been accountable for a number of cases, and the rights of the community should be observed, as well as the care of the individual case. Undoubtedly, a serum will be discovered, if it has not already been, with which the patient may be inoculated, just as antitoxin is used to prevent the onset of diphtheria, and, if such a serum is discovered, no harm can come from a preventive dose.

The after-care of the infantile paralysis case should be to conserve the position and volume of the muscles; that means that the position of the child should be made as normal and as comfortable as possible, otherwise paralyzed muscles tire rapidly, lose their volume, and in many instances become irretrievably destroyed.

Both of these diseases, it must be remembered, are reportable diseases, and the report should be sent in at the earliest possible moment, either by telegraph, telephone, or some other means of communication. The State Board of Health has been particularly fortunate in securing an appro-

priation of \$25,000 for this year and next year to combat the spreading of infantile paralysis, and it is hoped that some authority may be given by government officials to enable the Board to protect the community through this appropriation from the spread of cerebrospinal meningitis. The State Board of Health will, at the earliest possible moment, have field officers in the state, who will include an orthopedist, a head nurse, and two muscle-testers, together with district nurses throughout the state, whose duty it will be to look after these epidemics; and in this way it may be possible to control and prevent many cases of infection. The State Board of Health desires to enlist the good-will and assistance of all physicians in the state, and to that end will co-operate with anyone who desires assistance, and it is to be hoped that no physician will feel too sure of his ground in the recognition and diagnosis of either of these epidemic types. No man, certainly, should hesitate about calling in an experienced diagnostician and particularly men who are experienced in the recognition of these epidemic diseases.

It is safe to conclude that both these diseases spread along the lines of human travel, and therefore account for the isolated sections which have one or more cases in their midst. For instance, in northwestern Connecticut, in which the disease had not been known to exist for a period of ten years, cases were discovered which were evidently brought in by travelers. Most of these travelers, of course, are innocent carriers, and consequently further warning should be transmitted to the people that if they have come in contact in any way with either of these diseases they should use the utmost caution in preventing others from acquiring the same illness.

SAFER VACCINATION

There are many methods of vaccination that have been carried out by individual vaccinators in their own special fashion. The common method is to use a point or needle or bistoury to make several cross-scratches in two or three places on an arm or leg; then to either moisten the vaccine point or squeeze the vaccine out of a sealed tube over these areas. This is the common form of vaccination. The improved forms differ quite materially in that the skilled vaccinator now treats vaccination as a minor surgical procedure. He cleans the area to be vaccinated with alcohol or any good substitute, and then vaccinates in his own way. A much better method is one which

was used and advocated by Dr. C. N. Hewitt, the first Executive Officer of the Minnesota State Board of Health. Dr. Hewitt suggested that in place of scarification of the skin that a small bistoury point be used to pierce the skin at two or three points in an oblique manner. The incision should be very light and should not penetrate deeply, but sufficiently to cause a slight discoloration of the skin. Then the vaccine is applied over these small incisions. Dr. Hewitt attempted to make this method popular, but for some reason the majority of physicians evidently prefer the scarification in one way or another.

An equally simple and safe way is to cleanse the skin thoroughly, to anoint the skin at two or three points with vaccine, and then with a needle pierce the skin through the vaccine; and again the point of the needle should extend only into the skin a very short distance, enough to show that there was a little color through which the vaccine might enter. The reason for this method of vaccination is that the vaccine is taken at once into the minor blood-vessels, and its action is systemic rather than local. It has the further advantage that it produces no scars and no unsightly marks, and is less liable to infection by other germs. It has proven time and again that this method is superior to any other. The patient suffers no inconvenience, and there is no scab to itch and be contaminated by germs which may be lodged either on the surface of the unclean skin or from unclean clothing.

The antivaccinationists have long raised a humane cry against vaccination; and their efforts to abolish vaccination, or at least to make it non-compulsory, have succeeded, in many instances, on the ground that vaccination is frequently dangerous and occasionally causes loss of life or limb. Their complaints are more or less justified because so many vaccination procedures have been followed by extremely unpleasant complications and sometimes by open wounds which have become dangerously infective. The fault lies almost entirely with the vaccinator, and all of this can be eliminated if the vaccination is done under the methods suggested above,—that is, the absence of scarification and the introduction of vaccination through minute needle points.

On account of the present war, it is quite likely that many thousands of men and women will be vaccinated, and they should all be saved the torment, discomfort, and uncertainty of an infected vaccination operation. We know that the vaccination against typhoid by the hypodermic method produces no outward signs, and

the needle point does not become infected because it pierces the skin, and the vaccine is lodged where it belongs and where it is readily and rapidly taken up by the blood-stream. If this method is safe in antityphoid vaccination and in the use of other subcutaneous vaccinations, why should not the same safeguard be thrown around vaccination against smallpox. It is claimed, too, that the puncture or needle-point vaccination method is not only safer, but the probabilities for a vaccina to develop are much more likely,—that is, the majority of persons vaccinated in this manner get the benefit of it, while many of those vaccinated by the scratch method do not take.

MISCELLANY

PROGRAM OF THE ANNUAL MEETING OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION

Yankton, South Dakota

TUESDAY, MAY 29, 9:00 A. M.

1. *The President's Address*—Dr. F. M. Crain, Redfield.
2. *Some Notes on European War Surgery*—Dr. A. O. Fasser, Belle Fourche.
3. *Medical Preparedness*—Dr. F. A. Spafford, Flaudreau. Discussion opened by Dr. Frederick Treon, Chamberlain.
4. *Ocular Tuberculosis*—Dr. Frank E. Burch, St. Paul, Minn. Discussion opened by Dr. J. G. Parsons, Sioux Falls.

TUESDAY, MAY 29, 2:00 P. M.

5. *South Dakota Public Health*—Dr. F. E. Ashcroft, Deadwood. Discussion opened by Dr. C. E. McCauley, Aberdeen.
6. *War Hospital Pictures*—At the State Hospital.
7. *Clinic at the State Hospital*—Drs. G. S. Adams and F. V. Willhite, Yankton.

WEDNESDAY, MAY 30, 9:00 A. M.

8. *Gastric Ulcer*—Dr. J. C. Baker, Ramona. Discussion opened by Dr. E. L. Perkins, Sioux Falls.
9. *Toxemia*—Dr. B. T. Green, Brookings. Discussion opened by Dr. C. S. O'Toole, Watertown.
10. *Syphilitic Pseudoparalysis*—Dr. T. F. Riggs, Pierre. Discussion opened by Dr. F. W. Freyberg, Aberdeen.
11. *Some Points in the Preparation of Material for Laboratory Examinations*—Dr. Mortimer Herzberg, Vermillion. Discussion opened by Dr. C. F. Raver, Aberdeen.
12. *Röntgenology in Medicine and Surgery*—Dr. N. J. Nessa, Sioux Falls. Discussion opened by Dr. H. I. King, Aberdeen.

WEDNESDAY, MAY 30, 2:00 P. M.

13. *Address*—Dr. John G. Bowman, American College of Surgeons, Chicago, Ill.
14. *Neglected Surgery*—Dr. R. S. Westaby, Madison. Discussion opened by Dr. J. F. Adams, Aberdeen.
15. *Intraperitoneal Emergencies*—Dr. R. L. Murdy, Aberdeen. Discussion opened by Dr. B. A. Bobb, Mitchell.
16. *Hemorrhoidectomy under Local Anesthesia*—Dr. E. L. DeLanney, Omaha, Neb. Discussion opened by Dr. B. H. Sprague, Huron.
17. *The Operative and Non-operative Treatment of Certain Fractures (lantern-slides)*—Dr. G. G. Cottam, Sioux Falls. Discussion opened by Dr. S. M. Hohf, Yankton.

NEWS ITEMS

Dr. E. H. Hilts, of Kramer, N. D., has moved to Westhope, N. D.

Dr. N. W. Schumacher has moved from Dent, Minn., to Hettinger, S. D.

Dr. J. M. Walsh, of Fort Pierre, S. D., has moved to Rapid City, S. D.

A fire badly damaged the Morgan Park (Duluth) Hospital on April 21.

Dr. J. N. Mallory, of Emily, died on April 27 after an illness of several weeks.

An additional story is to be added to the Sprague Hospital building at Huron, S. D., this summer.

Dr. J. A. Crosby, a resident of Minneapolis for over thirty years, died at his home on May 1 at the age of 63.

Dr. W. T. Adams died at his home in Elgin April 25, at the age of 68, following a year's illness due to heart trouble.

Dr. E. W. Arnold, of Bigelow, has taken over the practice of Dr. C. C. Corwin, of Adrian, the latter moving to Minneapolis.

Dr. H. T. Doust, a member of the Rood Hospital staff at Nashwauk, was married on April 25 to Miss Audrey Miller, of Hibbing.

Dr. Merton Field, of St. Peter, has purchased a fine residence building at that place, which he intends to convert into a hospital and sanatorium.

Dr. R. J. Sewall, formerly of Crosby, is stationed at Duluth, where he is in charge of the battalion infirmary of the First Minnesota regiment.

Dr. Theodor Bratrud, of Grand Forks, N. D., has given St. Olaf's College at Northfield, Minn.,

\$5,000 for a fund, the interest on which is loaned to needy students in the college.

The Iowa legislature appropriated \$150,000 for a hospital building for crippled and deformed children. The Minnesota legislature appropriated less than one-third of that amount, and the governor vetoed the bill.

We again call attention to the schedule of clinics posted at the library rooms of the Hennepin County Medical Society on the top floor of the Donaldson Building. Visiting physicians may find there a fairly complete list of the clinics being held each day.

Dr. O. C. Tanner, a graduate of the Medical School of the University of Minnesota, was married April 26 to Miss Clementine Bowman, of Minneapolis. Dr. Tanner will leave soon for Washington, having been appointed lieutenant in the medical corps of the navy.

The plan of having all medical schools in the country abandon their summer vacations, as announced in our last issue, has been changed, and these schools will follow their established usages. The Medical School of the University of Minnesota will conduct its special summer work as in the past.

A number of county and district medical societies of the Northwest at recent meetings have pledged the Government all the medical men needed for service at home or abroad on account of the world war; and they also pledged themselves to care for the families of the medical men called into such service.

The Aberdeen District Medical Society of South Dakota held an unusually profitable and interesting meeting last month with a large attendance. Papers were presented by Dr. R. S. Hart, Turton; Dr. M. C. Johnston, Aberdeen; Dr. B. C. Murdy, Aberdeen; Dr. F. M. Baldwin, Redfield; Dr. F. A. Spafford, Flandreau; and Dr. J. C. Litzenberg, Minneapolis.

The Modern Hospital will devote its June issue to occupational therapy and occupations for the handicapped. All its papers will be by distinguished specialists who will make the number a valuable volume to all men interested in these special topics. The issue will contain valuable contributions on other subjects. One worthy of special note is a paper by Miss Alice F. Bell on the standardization of records in training-schools for nurses. This admirable periodical is published in St. Louis, with its editorial offices in Chicago.

The following Minneapolis people attended the National League of Nursing Education and the American Nurses' Association at Philadelphia April 23 to 30: Miss Holmes, Abbot's Hospital; Miss Notham, City Hospital; Miss Matlek, Hill Crest Hospital; Miss Christianson, Northwestern Hospital; Mrs. Eitel, Eitel Hospital; Miss Rommel, Hennepin County Nurses' Association; and Miss Patterson, the Visiting Nurses Association.

An increase in private-room rates was made by several of the general hospitals in Minneapolis to take effect May 1. At the same time the hospitals are introducing the plan of quoting rates by the day instead of by the week. The increase averages about 15 per cent. The sudden and very large increase in the price of steam coal has hit the hospitals hard. One institution of 175 beds reports an increase of \$600 a month in its fuel bill by reason of the increase in the price of soft coal screenings from \$4.40 per ton, the price prevailing up to March 31st, to \$8.30, the new price effective April 1st. The same hospital states that its supply of potatoes, which two years ago cost about \$40 for the month of March, this year cost \$180 for the same quantity. It is evident that an increase in the rates paid by patients is necessary, if the hospitals are to keep on serving the sick. A hospital with a monthly deficit cannot exist very long in these days.

PHYSICIANS LICENSED AT THE JANUARY (1917) EXAMINATION TO PRACTICE IN MINNESOTA

UPON EXAMINATION

Dahlstrom, Arthur W. Marquette, 1916
Egilsrud, Kristian. U. of Christiania, 1892
Hunter, Hobart R. Rush, 1913
McCormick, Thomas F. Marquette, 1916
Middleton, William D. U. of Illinois, 1914
Whitmore, Frank W., Jr. . . . Northwestern, 1915

BY RECIPROCITY

Bone, Merle. U. of Iowa, 1907
Brereton, Harold L. Rush, 1914
Guyer, Leo G. Creighton, 1911
Henney, William H. U. of Nebraska, 1908
Jacobs, George C. Chicago Col. of Med., 1908
McPheeters, Herman O. . . . Northwestern, 1915
Northington, James M. . . . Virginia Med. Col., 1905
Undine, Clyde A. U. of Nebraska, 1916
Stachniewicz, Vincent J. . . . Geo. Wash. U., 1916
Sivertsen, Andrew. Marquette, 1916
Sutton, Lawrence F. V. . . . P. & S. Baltimore, 1906

MINNEAPOLIS OFFICE FOR RENT

Very desirable office in residential section of the city. Will sell office equipment reasonably. Address 501, care this office.

PRACTICE FOR SALE

An unopposed practice, established eight years in a good small town. Invoice and take part cash. Address F. L. Darland, Sawyer, N. D.

OFFICE FOR RENT

A physician's and dentist's office for rent in a good location. Three hospitals near by. Vedeler Drug Store, 2200 Riverside Ave., Minneapolis.

LOCUM TENENS WANTED

Experienced physician and surgeon is open to take the practice of physician going to the front for six months or more—in Twin Cities. Address 506, care of this office.

PARTNER OR ASSOCIATE WANTED

A physician in general work in one of the larger towns in South Dakota would like to have a partner or associate; expects to be away part of next winter. Address 497, care of this office.

POSITION OPEN

I want a locum tenens or I will sell my unopposed practice in southern Minnesota for the price of office equipment. Large territory and fine location. Address 492, care of this office.

PHYSICIAN WANTED

Fine location—village of 300 in Southern Minnesota. Large territory tributary; at least \$100.00 per month guaranteed from the start. Address 488, care of this office.

POSITION WANTED

An assistantship, partnership, or locum tenens work in Minnesota by an experienced physician who can give best of references. Internal medicine, obstetrics and pediatrics preferred. Address 494, care of this office.

FOR RENT—FULLY EQUIPPED OFFICE IN METROPOLITAN BANK BUILDING, MINNEAPOLIS

Two physicians will share their splendid suite of offices in the above-named building with a third physician—internalist preferred. Address 507, care of this office.

APPARATUS FOR SALE

Betz entire body (reclining kind) hot-air apparatus or electrical body apparatus. Address 499, care of this office.

PHYSICIAN WANTED

We desire the services of a good physician. Will pay \$125 per month, with room and board. Give particulars. Jordan Sulphur Springs and Mud Bath Sanitarium, Jordan, Minn.

FOR SALE

Practice of \$3,500 to \$4,000 in a village of 600 in Southern Minnesota. Collections 95 per cent. Town has high school and electric lights. No real estate. Might form partnership. Address 487, care of this office.

OFFICE FOR RENT

I desire to sublet my suite of offices (tiled-floor operating-room, consultation-room, rest-room, dark-room, and reception-room) in the Masonic Temple, Minneapolis. Will sell the fixtures for offices at a fair price. Address 502, care of this office.

LOCUM TENENCY WANTED

Recently finished my internship at the City and County Hospital of St. Paul and can give best of references as to ability and character. Can go at once and for any length of time not exceeding four months. Prefer small town with little or no competition. Address 491, care of this office.

PRACTICE FOR SALE

A \$5,000 unopposed practice in small town in northern Minnesota on railroad; good roads. Nearest doctors east 10 miles, west 15 miles, south 25 miles, north, very far. Equipment, \$500. \$2,000 drug stock optional. Have commission in U. S. Corps subject to being called at any time. Reasonable terms. Address 505, care of this office.

ASSOCIATE PHYSICIAN IN HOSPITAL WORK WANTED

I want a young man to work with me in my well-established hospital in a good Minnesota town. One who can speak the Scandinavian languages or German preferred, but not indispensable. If he can do eye, ear, nose, and throat work with x-ray and cystoscopic work, or if he is good enough in general work partly to relieve me, I can do the special work named. I want a good man for a good place at once. Give a full account of yourself in your first letter. You will be satisfied with the work if you can do it. Address 503, care of this office.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Ada	1,253	1,432	0															1
Albert Lea	4,500	6,192	6															
Alexandria	2,681	3,001	8															
Anoka	3,769	3,972	4		1													1
Austin	5,474	6,960	8			2												1
Barnesville	1,326	1,353	2															
Bemidji	2,183	5,099	8	1											1		1	1
Benson	1,525	1,677	3													1		1
Blue Earth	2,900	2,319	2															
Brainerd	7,524	8,526	22			3									1	2		1
Breckenridge	1,282	1,840	4															
Canby	1,100	1,523	2	1														
Cannon Falls	1,239	1,385	2															
Chaska	2,165	2,050	1	1														
Chatfield	1,426	1,226	3															
Cloquet	3,074	7,031	7	1		2											1	1
Crookston	5,359	7,559	7	2		1											1	
Dawson	962	1,318	0															
Detroit	2,060	2,807	2			1												
Duluth	52,968	78,466	98	7	4	22	1	1	0	0	0	0	1	0	2	5	0	4
East Grand Forks	2,077	2,533	4															
Ely	3,572	3,572	4			1			1							1		
Eveleth	2,752	7,036	4			1				1								
Fairmont	3,440	2,953	2															
Faribault	7,868	9,001	7										1		1			1
Fergus Falls	6,072	6,887	7			2												
Glencoe	1,788	1,783	3	1												1		1
Glenwood	1,116	2,161	2			1												1
Granite Falls	1,454	1,454	1															
Hastings	3,811	3,983	7													1		
Hutchinson	2,495	2,368	3															
International Falls		1,487	6			2												1
Jordan	1,270	1,151	0															
Lake City	3,142	3,142	1															
Le Sueur	1,937	1,755	3		1	1												
Little Falls	5,774	6,078	5															
Luverne	2,223	2,540	3															
Madison	1,336	1,811	1														1	
Mankato	10,559	10,365	16	1		2										1		1
Marshall	2,088	2,152	3															
Melrose	2,591	2,591	1													1		
Minneapolis	202,718	301,408	374	39	6	45	4	1	2	1	1	0	2	2	4	24	1	24
Montevideo	2,146	3,056	8								1							
Montgomery	979	1,267	2															
Moorhead	3,730	4,840	8	1		1										2		
Morris	1,934	1,685	*															
New Prague	1,228	1,554	3			1												
New Ulm	5,403	5,648	11			1												2
Northfield	3,210	3,215	4	1												1		
Ortonville	1,247	1,774	2															
Owatonna	5,561	5,653	4															
Pipestone	2,536	2,475	2															
Red Lake Falls	1,666	1,666	1															
Red Wing	7,525	9,048	8	1												1		
Redwood Falls	1,661	1,666	4			1												
Renville	1,075	1,182	0															
Rochester	6,843	7,844	45	2	1	1			2							11		2
Rushford	1,100	1,011	1	1														
St. Charles	1,304	1,159	0															
St. Cloud	8,663	10,600	16	1	1	2										3	1	
St. James	2,102	2,102	3															
St. Paul	163,632	214,744	236	19	8	19	4	1	2	0	0	0	0	1	3	18	2	13
St. Peter	4,302	4,176	1															
Sauk Centre	2,154	2,154	4															
Shakopee	2,046	2,302	7															
Sleepy Eye	2,046	2,247	3			1												
South St. Paul	2,322	4,510	4	1		1										1		
Staples	1,504	2,558	5			1										1	1	
Stillwater	12,318	10,198	9															
Thief River Falls	1,819	3,174	3	1														
Tower	1,111	1,111	2															
Tracy	1,911	1,826	1															
Two Harbors	3,278	4,990	2			1												
Virginia	2,962	10,473	18	1		5			1							2		1
Wabasha	2,622	2,622	9													1		
Warren	1,276	1,613	0															
Waseca	3,103	3,054	3															
Waterville	1,260	1,273	2															
West St. Paul	1,830	2,660	4			1										1		
Willmar	3,409	4,135	10	1														3
Winona	19,714	18,583	31			7										4		
Winthrop	813	1,043	1															
Worthington	2,386	2,385	4													2		

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Fuereperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	2															
Aitkin	1,719	1,633	0															
Akeley			0															
Appleton	1,184	1,221	1			1												
Belle Plaine	1,121	1,204	2														1	
Biwabik		1,690	1															
Bovey		1,377	1															
Browns Valley	721	1,058	0															
Buffalo	1,040	1,227	3															1
Caledonia	1,175	1,372	1	1														
Cass Lake	546	2,011	1			1												
Chisholm		7,684	10	1		5										1		
Coleraine		1,613	0															
Delano	967	1,031	2			1												
Farmington	733	1,024	2															
Fosston	864	1,055	2															
Frazee	1,000	1,645	1															1
Grand Rapids	1,428	2,239	2	1														
Hibbing	2,481	8,832	10		1	3									1	1		1
Jackson	1,756	1,907	2			1												
Janesville	1,254	1,173	1														1	
Kenyon	1,202	1,237	1															
Lake Crystal	1,215	1,038	2													1		
Litchfield	2,280	2,333	3	1														
Long Prairie	1,385	1,250	0															
Madelia	1,272	1,273	0															
Milaca	1,204	1,102	0															
Mountain Lake	959	1,081	2															
Nashwauk		2,080	1	1												1		
North Mankato	939	1,279	2															
North St. Paul	1,110	1,404	1			1												1
Osakis	917	1,013	0															
Park Rapids	1,313	1,850	2															
Pelican Rapids	1,033	1,019	1															
Perham	1,182	1,376	1															
Pine City	993	1,258	1			1												
Plainview	1,038	1,175	1															
Preston	1,278	1,193	2															
Princeton	1,319	1,555	4			1											1	
St. Louis Park	1,325	1,743	1															
Sandstone	1,189	1,818	0															
Sauk Rapids	1,391	1,745	1	1														
South Stillwater	1,422	1,343	0															
Springfield	1,511	1,482	0															
Spring Valley	1,770	1,817	2			2												
Wadena	1,520	1,820	0															
Wells	2,017	1,755	2															
West Minneapolis	2,250	3,022	2															
Wheaton	1,132	1,300	0															
White Bear Lake	1,288	1,505	0															
Windom	1,944	1,749	0															
Winnebago City	1,816	2,555	2			1												
Zumbrota	1,119	1,138	1															
STATE INSTITUTIONS			2	1				1										
Anoka, Asylum			0															
Faribault, School for Blind			0															
Faribault, School for Deaf			0															
Faribault, School for Feeble Minded			2															
Fergus Falls, Hospital for Insane			9	3														
Hastings, Asylum			2															
Minneapolis, Soldiers' Home			7														1	
Owatonna, School for Dependents			0															
Red Wing, State Training School			0															
Rochester, Hospital for Insane			17	4														
Sauk Centre, Home School for Girls			0															
St. Peter, Hospital for Insane			9	3														
St. Cloud, State Reformatory			0															
Stillwater, State Prison			0															
OTHER PARTS OF STATE			912	68	10	116	4	6	5	0	3	1	1	4	27	56	4	29
Total for state			2165	169	33	263	14	10	13	2	5	1	5	9	48	150	9	92

*No report received. REGISTRAR not doing his duty.

154 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

PLANS FOR THE TRIP TO THE A. M. A. MEETING

The plans for bringing the northwestern physicians together on the journey to the June meeting of the A. M. A. are now completed.

The Chicago, Milwaukee and St. Paul Line has arranged with the Baltimore & Ohio Railroad to receive the party at Chicago and take it by daylight over that part of the line so full of interest because of its beautiful scenery and its many battlefields. This historic interest and natural scenery is unmatched on any other railroad in America, and the medical men who take the trip are to be congratulated on the opportunity thus furnished them.

It would be exceedingly pleasing if some members of the party could give from their own experiences personal details of the days of John Brown and his Harper's Ferry raid, especially if such reminiscences were given when the party reaches Harper's Ferry.

We venture to believe that the trip and the meeting will be the most memorable in the history of at least the northwestern medical men.

The date of leaving the Twin Cities will be announced in our next issue, but sleeping-car reservations should be made at once.

PREJUDICE VS. FACTS

In a small pamphlet of thirty-six pages the Calumet Baking Powder Company presents interesting and valuable (money-saving) facts concerning the history of baking powder and this Company's relation to the baking-powder trust. The pamphlet is exceedingly interesting to one who has the least interest in the manner in which the public can be and is fooled by misrepresentation where exact chemical facts are obtainable to refute the absurd claims made to the great financial loss of the public.

SAFE MILK FOR SUMMER MONTHS

The uncertainty as to the safety of cow's milk increases proportionately as the summer advances. More ice is required. More care must be exercised. The milk problem becomes a constant source of worry to the conscientious mother, nurse and physician. It is at this time that the safety and convenience of such a uniformly dependable milk supply as "Horlick's," the Original Malted Milk, is most appreciated and advantageous. For "Horlick's" provides a real welfare safeguard to infant, invalid, and convalescent.

THE JORDAN SULPHUR SPRINGS AND MUD BATH SANITARIUM

A few sulphur mud baths will not cure all the diseases known to man, but this treatment is so efficacious in a few lines and so readily demonstrates its efficiency that it has become recognized in the medical profession as entirely worth while, and the profession is now sending more patients to the mud baths than ever before.

The Jordan institution above named is "The Home of the Sulphur Springs," and is a well-conducted sanitarium whose management has gained the confidence of medical men. The building is commodious, the table is

good, the prices are very moderate, and the location is admirable. The sanitarium has been under the same management for years, and any information required can be had by writing the manager, Mr. J. J. Leonard.

OATS AN EXCELLENT SUBSTITUTE FOR WHEAT

The nutritive value of oatmeal, as compared with that of wheat flour, has been firmly established, and for thousands of years the oat has been the advocated food.

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The intestinal tract may be compared not inaptly to a sewer, which, if not cleansed and disinfected at times, is likely to generate and spread disease. The human sewer, however, is infinitely more dangerous to the health of the individual than those contrivances originated by man for the purpose of carrying away waste and filth in order that the community may be protected against infection. If the waste products be not constantly removed from the human sewer, they will putrefy and poison the entire system. This simply means that the excretory organs must be in good working order. While diet and exercise will go far towards bringing this about, there are many who are unable by the exigencies of their callings to pay proper attention to these essentials of health and must have recourse to evacuants. It must also be borne in mind that chronic intestinal stasis frequently results in infection of the urinary tract, and accordingly in treating disorders or maladies due to faulty elimination, both the intestinal and genito-urinary tracts should be purified. This is best accomplished by Cystogen Aperient,

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The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, JUNE 1, 1917

No. 11

ABDOMINAL SURGERY UNDER LOCAL ANESTHESIA*

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MINNEAPOLIS

In considering this subject I have assumed that the requirements of the patient are paramount, and that all other considerations are of secondary importance.

The ideal anesthetic has not yet been discovered. Ether and nitrous oxide are used most extensively as general anesthetics today, while

an individual is using a particular brand, it is apt to be the best. This condition is due, in a measure, perhaps, to the fact that experience with one method leads to improvement in its application with gradually increasing satisfaction in its use.

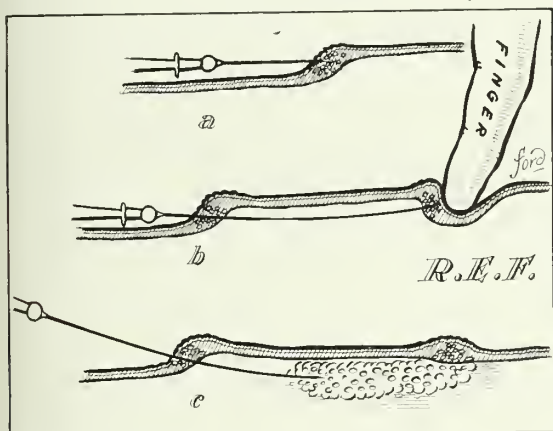


Fig. 1. Abdominal operations. Sectional views of the skin. a. Method of making first dermal wheal; b. Painless subcutaneous method of making secondary wheals; c. Method of making subdermal infiltration.

novocain is the local anesthetic of choice. Each anesthetic, whether local or general, has its special point of excellence. Many have specific fields of usefulness. Their values are relative, and there is a great variety of opinions regarding the relative values. Methods of anesthesia are much like automobiles and shotguns: while

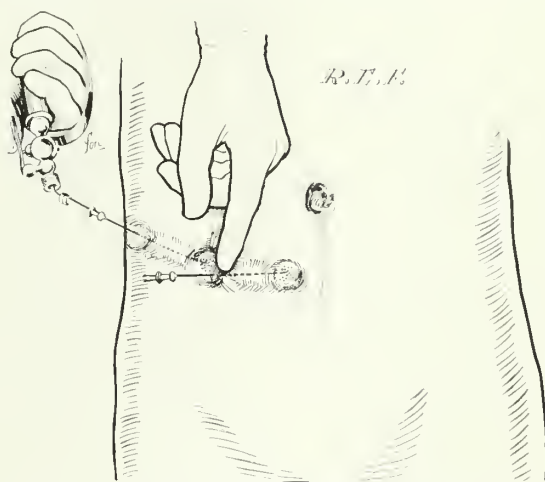


Fig. 2. Abdominal operations. Appendectomy, showing painless subcutaneous method of making secondary wheals.

The influences which underlie the choice of any particular method of anesthesia are manifold. There is a marked tendency to follow established customs. Sentiment is created at the larger surgical centers, quite naturally, and is rapidly disseminated to the smaller clinics. To break away from established methods that have given fair satisfaction in the hands of those with most experience requires considerable fortitude. It is my belief that the feeling that "if it is good

*Read before the Minnesota State Medical Association, Minneapolis, October 12, 1916, and, by request, before the West Wisconsin District Medical Society, Eau Claire, Wis., November 9, 1916.

enough for them, it is good enough for me," is often the deciding factor in the choice of an anesthetic, rather than what is the best thing for the patient in each individual case. I believe that it is the custom of surgeons to limit the use of local anesthesia to minor surgery or to cases in which general anesthesia is contra-indicated on account of the extreme hazard. If it were possible to so modify the custom in this regard that surgeons would reserve for general anesthesia *only* cases which could *not* be operated on under local anesthesia, it is my belief that great benefit would accrue; therefore, my plea will be for a

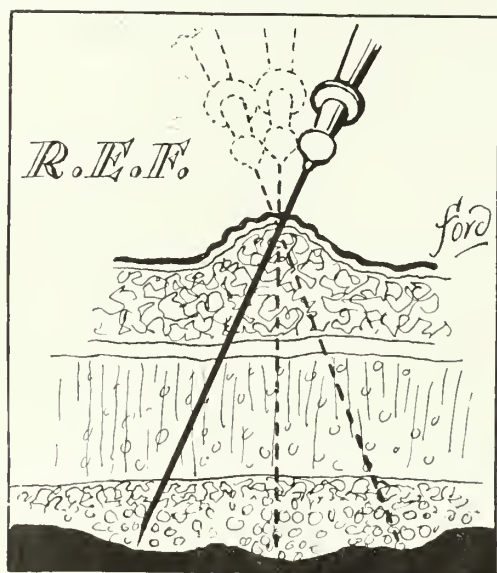


Fig. 3. Abdominal operations. Appendectomy. Transverse section across line of infiltrated abdominal wall.

broader application of the use of local anesthesia, its more extensive use in major surgery. I shall devote my attention mainly to the technic of its use in abdominal surgery in the belief that calling attention to its application in this field of work will do more for the advancement of this method of anesthesia than will a repetition of the well-known arguments that are usually offered in its favor.

The first question to be considered is, To what class of cases is local anesthesia limited in doing abdominal surgery? The second is, What are the contra-indications to local anesthesia in abdominal surgery?

With regard to work on the abdominal wall, there are no contra-indications. With regard to work on any of the movable organs within the abdominal cavity, there are no contra-indications. With regard to age, there are no contra-indica-

tions. With regard to certain forms of disease within the abdominal cavity, there are contra-indications that are to be considered later.

Success in this work is dependent on the careful carrying out of certain details which are based upon well-established principles. In all work on the abdominal wall the principles, as far as the anesthesia is concerned, are exactly the same as those employed in the removal of a papilloma or a sebaceous cyst from the skin. After the abdominal wall is incised, there is no essential difference between the performance of an appendectomy, a hysterectomy, a cholecystectomy, a gastrectomy, or an enterectomy. In work on the abdominal wall, a thorough infiltration of the tissues to be incised is necessary. *Ample incision, careful manipulation, vertical retraction*, and an appropriate position of the patient, combined with a judicious use of the anesthetic where needed, will not only result in a large measure of success, but will give the surgeon an opportunity to do the requisite operation within the peritoneal cavity with less trauma and more

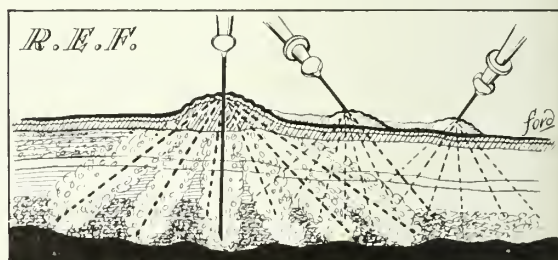


Fig. 4. Abdominal operations. Diagonal sectional view of infiltrated abdominal wall.

precision, deliberation, and attention to details than can be done by any other method except that of spinal anesthesia.

The advantages of the sense of sight over that of touch are well recognized by everyone. A proper use of local anesthesia will enable the surgeon to inspect the intra-abdominal organs, in a large majority of cases, in their exact relation to one another before they are disturbed by the manipulation of the surgeon's hand, or the straining which often accompanies general anesthesia. I have often seen surgeons open the abdomen through a McBurney incision, introduce one or two fingers and, after some manipulation, deliver the appendix by traction upon the cecum, and then state to the audience the position in which it was found. Personally, I have never been able so to educate my sense of touch that I could definitely locate the position of the

non-adherent appendix with any degree of certainty. It is only since I have been using local anesthesia with *vertical retraction* that I have been able, by the sense of sight, absolutely to locate the appendix in its native haunt. In no other form of anesthesia except spinal can we produce a negative abdominal pressure so that we may open the door and look in.

CONTRA-INDICATIONS

Psychic.—It is my impression that the number of patients who are mentally incompatible with

suffered pain during the liberation of a gangrenous appendix.

This psychically incompatible class, small as it is, may be greatly reduced by a careful use of narcotics before operation. Their use is, I believe, not only safe but extremely comforting, and perhaps very beneficial in eliminating that rather intangible element referred to as psychic shock.¹

Pathological.—The greatest contra-indication

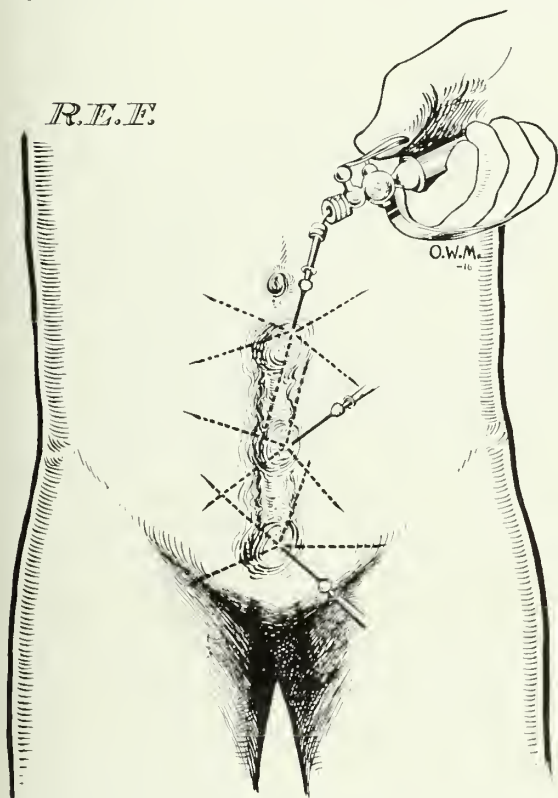


Fig. 5. Abdominal operations (surface view), showing method of making complete infiltration of abdominal wall.

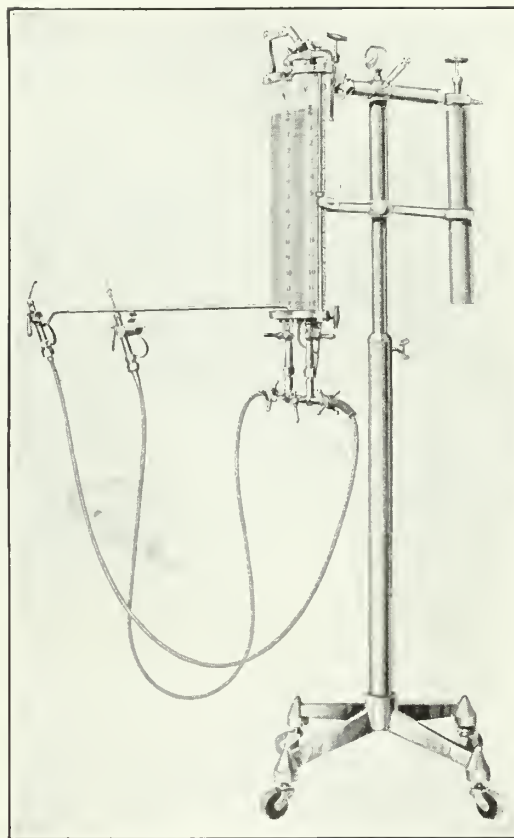


Fig. 6. Abdominal operations. Pneumatic injector for the introduction of local anesthesia.

the use of this method is very small, but, undoubtedly, there are some who fall into this class. That there are many such is due more to ignorance and wrong teaching than to so-called nervousness or to lack of self-control on the part of the patient. In this connection I might mention the well-known fact that even with the most expert anesthetist restraint is occasionally necessary during the production of general narcosis, especially in children. I have performed laparotomies on children as young as two years, and several on children under eleven, without resort to any physical restraint, although one of these

to local anesthesia in abdominal work is the presence of disease which necessitates traction on the posterior-parietal peritoneum. The removal of large tumors with broad pedicles, the treatment of disease following peritonitis, and the removal of the gall-bladder may be impossible; however, with a perfect exposure of the conditions and with scissors or knife dissection of the adhesions, the amount which may be accomplished even in these cases is surprising. Where possible, the careful dissection of adherent

1. Farr: "Narco-Local Anesthesia," St. Paul Med. Jour., May, 1916.

masses, thus liberating them before they are elevated, instead of forcible blind enucleation with the finger, greatly lessens the trauma of the patient.

TECHNIC

In detail, the technic which I have used for the removal of the appendix is as follows: The patient is placed on the table with the right side perhaps three or four inches higher than the left. A pillow beneath the right buttock, or an operating-table which tilts laterally, answers this purpose. The first wheal is made with the finest

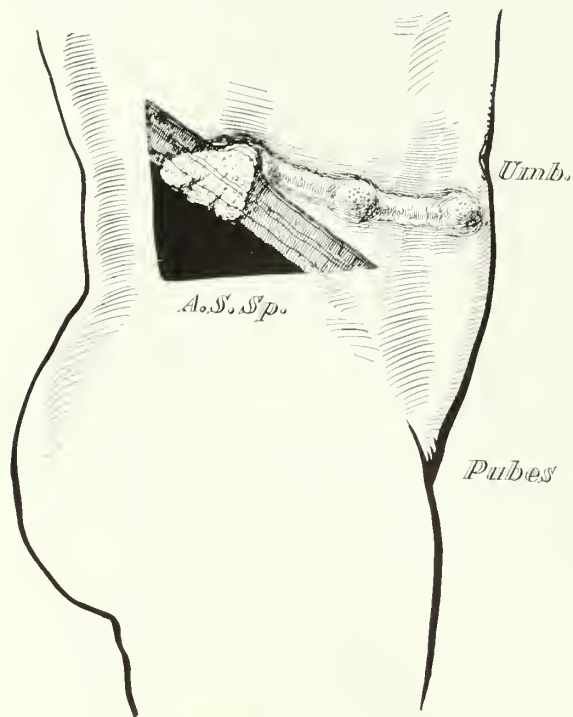


Fig. 7. Abdominal operations. Section of abdominal wall, showing area infiltrated.

hypodermic needle, and is *intradermal*. (Fig. 1, a.) Following this, a three-inch needle is passed through this wheal and advanced *beneath* the skin in the subdermal fat almost its entire length. It is made to impinge on the finger, which makes pressure on the skin until the point has entered the skin from beneath, perhaps two and one-half inches from the original puncture. (Fig. 1, b.) By this method another dermal wheal is painlessly produced. During the slow withdrawal of the needle, the fluid is injected continuously, thus making the subdermal infiltration, which raises the skin perceptibly. (Fig. 1, c.) The needle is then introduced through the second wheal and the process continued the entire length of the incision, or slightly beyond.

(Fig. 2.) The needle is then introduced vertically at the first point, and one can easily feel the needle pierce the different layers. While the needle is advancing, the fluid is steadily forced into the tissues, the needle being carried down quite to or even through the peritoneum. (Fig. 3.) This process is repeated along the line of incision until one is certain that the tissues to be incised are thoroughly infiltrated. (Figs. 4, 5.) From two to three ounces of a 0.5 per cent novocain solution may be used in an abdominal wall of average thickness. With the pneumatic in-

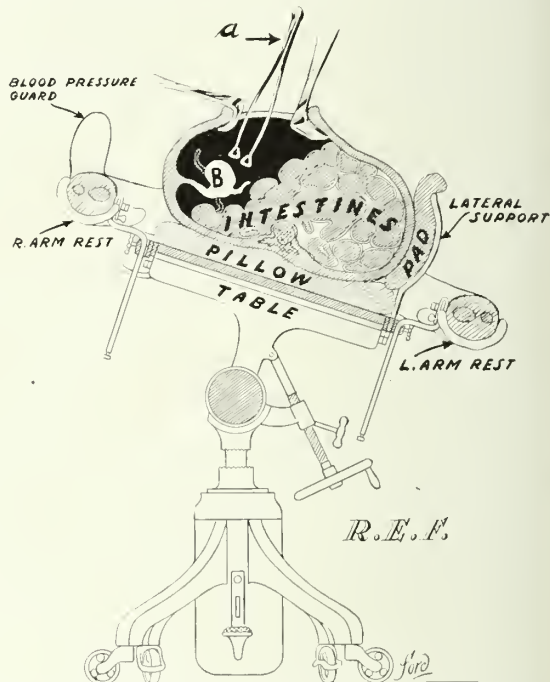


Fig. 8. Abdominal operations. Section of body at appendix level, showing vertical retraction and effect of gravity on intestines. a. Rubber-tipped forceps. b. Cecum.

jector (Fig. 6) this process consumes from two and one-half to three minutes, and subsequent dissection shows an infiltration of the tissues of approximately two inches in width throughout the entire line, as the fluid rapidly disseminates laterally. (Fig. 7.) In about four minutes from the time the injection is begun anesthesia is complete throughout the whole area.

It is my practice to bathe the skin with alcohol as soon as the injection is finished, and immediately to incise the tissues down to the aponeurosis. While the assistants are placing the protective towels at the edges of the incision, the surgeon's gloves may be washed or changed, and the operation continued without further delay. No more anesthesia is used until the appendix is

located. The abdominal wall is retracted *vertically* (Fig. 8), and the table is tilted to the



Fig. 9. Abdominal operations. Rubber-tipped forceps for handling intestines.

left. Often a slight Trendelenberg position aids in bringing the organs into view. By carefully moving the cecum laterally with the rubber-

operations for hernia, where the sac may be dis- tended at will by the patient and therefore be easily identified. An incomplete anesthesia will almost always result in the patient being com- pelled to grunt or strain, and so force the intes- tines out through the wound. With a complete anesthesia and a patient who is at all controllable, this accident is unusual. In a surprisingly large percentage of cases it has been possible to re- move the appendix and, in fact, perform other operations without using any pack in order to remove the coils of intestines from the field of operation, gravity alone being sufficient. (Fig. 11.) In some cases of uterine prolapse a pre- liminary packing of the vagina with the patient

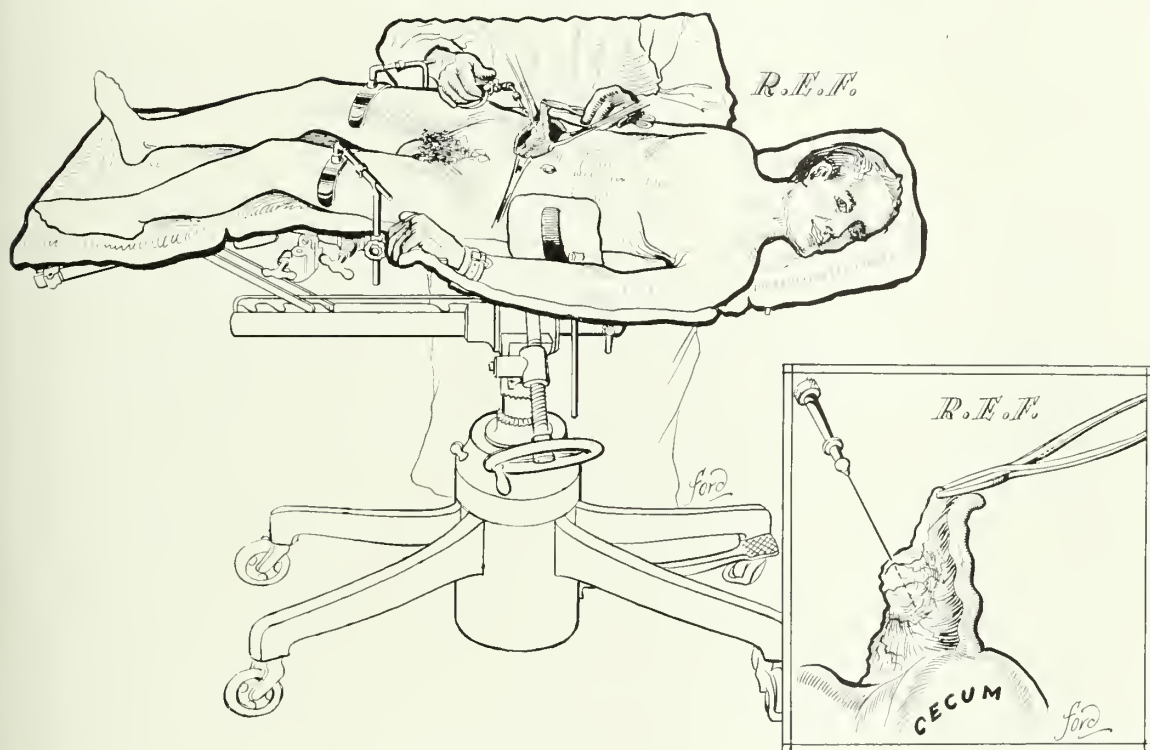


Fig. 10. Abdominal operations, showing lateral tilt of table. Vertical retraction. Insert: Infiltration of mesoappendix.

tipped forceps (Fig. 9) the appendix will come into view in every case in which it is not retro- cecal or adherent in the pelvis. While it is held in the rubber-tipped forceps, the meso-appendix is injected with novocain. (Fig. 10.) The ap- pendix may then be picked up and removed in the usual manner.

During these manipulations it is well to ask the patient to open his mouth and to avoid straining, thus reducing intra-abdominal pres- sure. This is a decided advantage except in

in the knee-chest position will eliminate the ne- cessity of painful traction caused by dragging the uterus out of the pelvis. With the sterile electric light (Fig. 12) and *vertical retraction*, the abdominal viscera may be visualized to a sur- prising extent.

Extreme gentleness and respect for the tissues are our strongest strategic points. As an aid to these I have devised a series of retractors which work automatically and with the least possible chance of tissue-injury.

A comparison of a series of laparotomies performed under this plan with a series performed under general anesthesia, shows such a difference in the convalescence from the standpoint of anxiety, gas, nausea, vomiting, and thirst that there can be no argument regarding the merits of the two methods, at least from the viewpoint of the patient. The condition of the laparotomized patient whose sensitive peritoneal surfaces have not been touched during the operation, com-

cases convalesce as if the abdomen had not been opened. The peritoneal cavity does not realize that it has been invaded.

My work on young children under local anesthesia gives me the impression that these patients lend themselves to the method fully as well as do older individuals. A realization of this fact

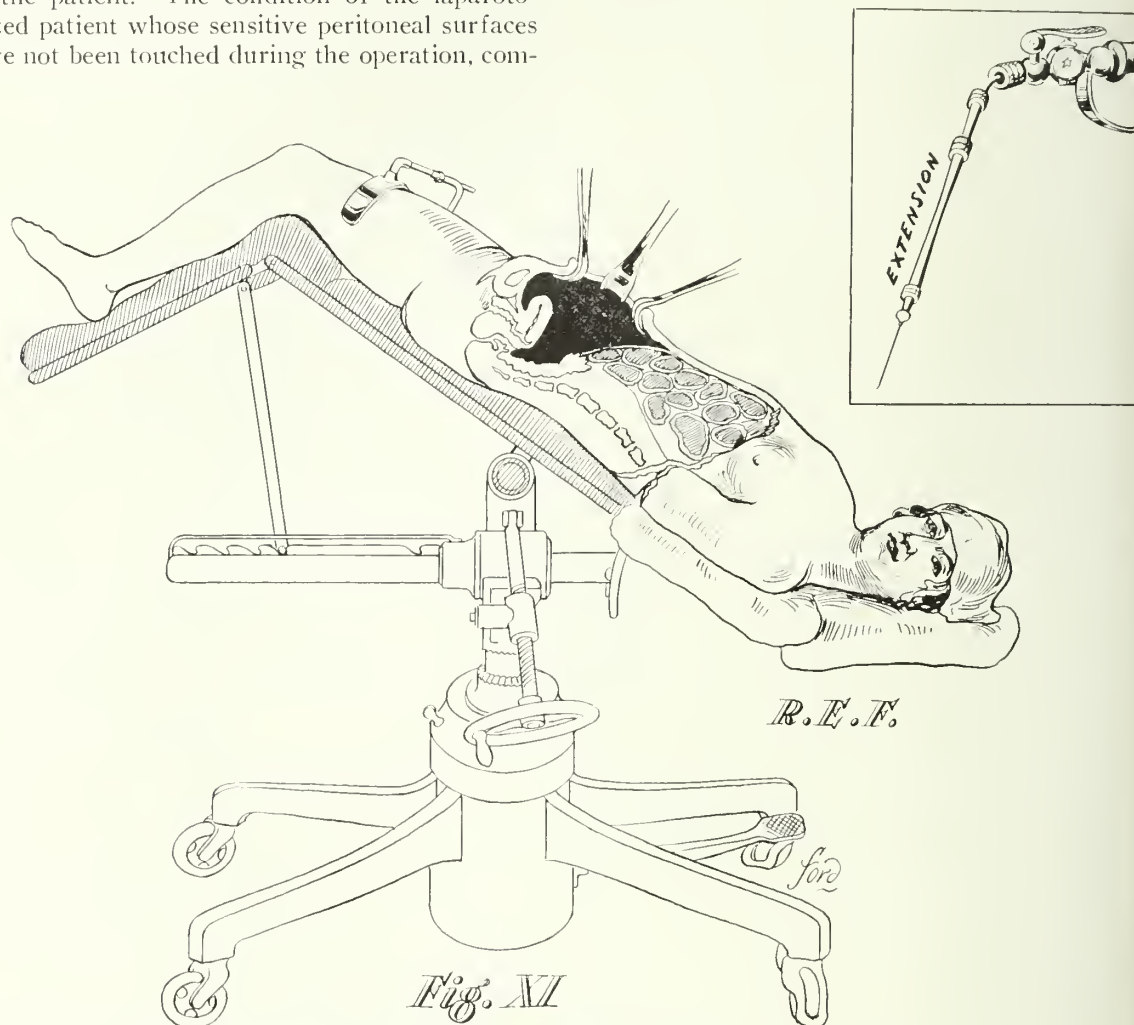


Fig. 11. Abdominal operations. Sagittal section of pelvic laparotomy. Note the vertical retraction, gravitation of intestines, and perfect exposure of viscera. Insert: Extension used for deep intraperitoneal infiltration.

pared with that of the individual whose abdominal organs have been traumatized by gauze-pressure or manipulation, is so striking as to be impressive. I have removed during recent years many appendices without having touched any portion of the intra-abdominal viscera, except when the cecum was handled by the rubber-tipped forceps or pierced by the suture. Even without the use of quinin-urea many of these

would be the means of saving a great many lives in cases of intussusception and pyloric stenosis in young children, when the administration of a general anesthetic in itself is often sufficient to bring about a fatal issue. Even in young children the amount of restraint required is insignificant compared with that which is almost always necessary during the induction of general narcosis.

CONCLUSIONS

1. The interest of the patient should be the main consideration in the choice of an anesthetic.
2. Novocain is the safest anesthetic known at the present time.
3. The toxicity of novocain depends on the strength of the solution rather than on the total amount used.
4. The use of local anesthesia should not be limited to the "surgical extremes," but should be extended to a considerable percentage of ordinary major surgical cases.
5. Abdominal surgery lends itself to the use of local anesthesia in a large percentage of cases.



Fig. 12. Sterile electric light.

6. With proper equipment and a liberal use of the drug, the time required for operation is not greatly increased.
7. Young children are especially well adapted to the use of local anesthesia in abdominal surgery.

DISCUSSION

DR. HERMAN A. H. BOUMAN (Minneapolis): The subject matter of local anesthesia is so large and of such practical importance that a person is unable to discuss it properly in the short time allotted to him, but I wish to present a few thoughts that I have gathered during my experience.

In 1892, at the Surgical Congress in Berlin, Dr. Schleich said that what we have been accustomed to do for a long time assumes easily the appearance of justification and tradition becomes law, and whoever upsets working systems of practice must naturally meet with opposition; and Dr. Schleich had his share. As early as 1894 he could point to a great many publications by his followers, and thousands of surgical operations were done according to his method. Anesthesia was the one epoch-making discovery which rendered modern surgery possible. We have all profited by it more or less, but if there is something better we must accept it. Dr. Crile was not satisfied, because his animal experimentations and his histological illustrations brought out facts which gave him more light. He calls the ideal anesthetic one, first, in which there is an absence of psychic trauma; second, in which there is no pain during operation; and, third, in which there is no pain after operation. He inspired Professor Kronig, so that he started to fulfill all of these postulates. Professor Kronig fulfilled two of these postulates by scopolamin and narcophin. He avoids psychic trauma, and he succeeds in getting no pain "during operation," but

the third postulate or requirement of "no pain" after operation he has not thus far fulfilled.

We should be proud of Dr. Farr's work. He deserves great credit for what he has done along the line of local anesthesia. The patients are ready for operation as under anoci-association; indeed, they look as if they have already arrived at the elysium. They are handled with the least possible disturbance. One woman, between fifty and sixty years of age, had three inches of the stomach resected. She could answer questions during the operation, and her breathing was quiet, and the abdominal organs were in ideal position. She would breathe deeply when asked to do so. I visited her for four days and her pulse never rose above 80. There were no vomiting and no gas pains. In fact, she seemed normal, and one could not tell that she had undergone an operation.

DR. F. J. PLONKE (St. Paul): We are indebted to Dr. Farr for an excellent paper. To the uninitiated in local anesthesia, the doctor's statement would seem somewhat visionary. I can testify, however, that all he says is true, for we have used novocain locally in about 10 per cent of our cases for the past two years with equally good results. We have limited its use largely to poor surgical risks or, rather, to not safe anesthetic risks, consequently, our experience does not cover such a wide variety of cases.

Our cases comprise many of the major operations, such as prostatectomies, hernias, appendectomies, partial gastrectomies, gastro-enterostomies, goiter, hemorrhoids, resection of ribs, etc.—all done under local anesthesia alone with no discomfort whatever to the patient. We recently operated on a woman seventy-four years of age, doing a partial gastrectomy for advanced carcinoma. On account of the extensive involvement the middle colic artery was injured, necessitating removal of the transverse colon. This, with the gastro-enterostomy, was done with novocain. She made a splendid recovery, and aside from the gas-distention always present in these colon operations she suffered practically no pain during convalescence.

We have not found it necessary to inject the uneso-appendix unless there were extensive adhesions. By being careful any work on the stomach or intestines can be done without pain. When traction is made the patient immediately complains.

I believe Dr. Farr's apparatus will aid materially in improving the technic of local anesthesia. It seems practical, and ought to reduce the time necessary for the injection considerably.

DR. A. C. STRACHAUER (Minneapolis): There is an old saying that "the good is the worst enemy of the best." A large number of surgeons the world over are endeavoring to improve upon our everyday "good" methods of anesthetization. The investigations and teachings of Dr. Crile have been the principal stimulus for the work being done in this country. If there is a better means of anesthetization than general anesthesia we want to know it. We must look at the subject open mindedly and be open to conviction. Dr. Farr deserves great credit for departing so radically from accepted practice and for trying out locally these new methods for us.

In this discussion it is important to differentiate between purely simple local anesthesia, and local anesthesia in conjunction with the injection of narcotics, as

scopolamin, etc. The first is local anesthesia, and the second is local anesthesia plus "twilight sleep." Considerable work has been done with the latter method. Prof. Bernhard Kroenig, of Freiburg, the home of "twilight sleep," reports with great enthusiasm 583 operations performed under narco-local anesthesia. Wayne Babcock, of Philadelphia, has probably had more experience with the combined method than anyone in this country. In Babcock's work, which I have seen, as far as the pain at the time of operation was concerned, the local anesthesia was superfluous. The majority of the patients were so deeply under the "twilight sleep" that they were limp when they were brought to the operating-room.

My personal work has been limited exclusively to plain local anesthesia. Based upon a considerable and successful experience covering the surgery of the brain, spinal cord, thorax, and lung, the amputation of arms and legs, the resection of joints, abdominal surgery, including the operations of hysterectomy and gastro-enterostomy, it is my opinion that the indications for local anesthesia in major surgery are the contra-indications to general anesthesia. Ether administered by the drop-method is the standard. Preliminary nitrous-oxide is routine in my private practice, and in fact I find that I am using gas more and more. Personally, I prefer not having the relatives and friends of the patient present at the operation. Likewise I prefer not having the patient present at his own operation, which he is with local anesthesia. General anesthesia takes him away from his operation. The average patient doesn't want to be present at his operation. When the individual understands that general anesthesia is extrahazardous or contra-indicated, and that a necessary operation can be absolutely painlessly performed under local anesthesia, his mental attitude changes, and the situation is met with calm courage and fortitude.

Local anesthesia and narco-local anesthesia are by no means ideal nor free from danger. I have had pneumonias develop after local anesthesia operations, and there have been "twilight sleep" deaths. The millennium has not arrived, but we are working for it. It will never come through being satisfied with the "good enough." It will come, however, through just such efforts as Dr. Farr is making.

DR. FARR (closing): Answering the observation of Dr. Plondke as to the difficulty of handling "nervous" patients, my experience with the average patient met with in ordinary private surgical practice has been that the nervous patient often comes to operation with the greatest fortitude, the slowest pulse, and with every condition we like in undertaking this work. There is no distinction between those who pay and those who do not pay. Charity has no bearing on the manner in which the patient submits himself to operation, and the phlegmatic individual is not necessarily the one who takes most kindly to this method of anesthesia. The

fear we have to assuage arises from lack of familiarity with the method, and is based on the assumption that the analgesia may be incomplete. It is, in fact, the unreasoning fear of pain accounted for by Dr. Crile's beautiful theory, "the philogeny of evolution." Everyone carries with him a subconscious dread engendered by the belief which has been held for thousands of years that a surgical operation is a terrible thing; but, as patients come to know that a surgical operation under local anesthesia is not the terrible thing they conceived it to be, less resistance and better co-operation will be assured. I have had patients write me: "My trip to the hospital was a picnic; all I had to worry about was the size of the bill." (Laughter.) Much has been accomplished when patients are so agreeably impressed. We wheel our patients out on the porch before operation, as we find the enthusiasm of convalescent patients is the best antidote we can have for morbid fear of the method. My experience with it is so uniformly favorable that I would not consider going back to the use of general anesthesia when novocain can be obtained.

From Krönig's article, published at the same time mine came out, one might gain the impression that the use of scopolamin and morphin as an adjunct to local anesthesia is for the relief of pain. As nearly as can be estimated from published figures, approximately three thousand preliminary hypodermics of morphin and atropin or morphin and hyoscin are given daily in connection with general anesthesia, a higher percentage than with local anesthesia. As an adjunct to local anesthesia these drugs are given solely for their psychic effect, to reduce the dread of operation, and to make the patients less sensitive to their surroundings. We must depend upon the local anesthetic for the relief of pain. The idea throughout is to do the best for the patient from all points of view, and the use of scopolamin and morphin should be looked upon as a comfort to the patient, relieving his apprehension—that is all. The advantage of this method is well shown by the fact that one nurse can care for three or four patients operated on under local, while each patient operated on under a general anesthetic requires the services of a nurse for some hours.

The nervous strain to the surgeon is less if the patient does not know he is being operated on. The question, however, is not how the doctor feels about it, but what is best for the patient. I do not believe that Dr. Strachauer meant to convey the impression that pneumonia is just as common in connection with local anesthesia as it is with general. Septic pneumonia may be as common, but there is no question that the lungs are less embarrassed with local anesthesia than when a general anesthetic is employed. In the comparatively large number of operations we have made under local anesthesia, pneumonia has occurred but once; that was in a goiter patient who developed pneumonia the fourth day and died.

DUODENAL DIVERTICULA, WITH REPORT OF A CASE ASSOCIATED WITH DUODENAL ULCER*

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In a review of the literature we have been able to find only seventy-six well-authenticated cases in which ninety-seven diverticula of the duodenum are described, only seven of which were in the first portion of the duodenum. The subject of duodenal diverticula has hitherto been considered chiefly from an anatomical standpoint. There is one operated case reported (Bauer, 1912) where there were symptoms for which a diverticulum of the duodenum might have been responsible. It was not discovered during operation, but was demonstrated post mortem, as all cases of duodenal diverticula preceding his have been.

The clinical importance of the case we are reporting is, in some degree, lost, because of its rarity as a surgical problem. Its interest lies, however, in the relation of the diverticulum to a duodenal ulcer, its position in the duodenum, its unusual size, and its demonstration at operation. With the intention of making this paper a complete presentation of diverticula in the first portion of the duodenum, we have collected all of the cases found reported heretofore.

The following are the descriptions collected from the literature:

1. Morgagni (1761). This specimen, which was obtained from the body of a man who had died of apoplexy, was situated two finger-breadths caudal to the pylorus, the orifice being large enough to admit a finger. The sac exhibited no traces of pathological changes.

2. Rahn (1796) found a duodenal diverticulum in the emaciated body of a woman twenty-two years old who had died of chronic emesis. This sac-shaped diverticulum was closely related to the pylorus and presented a mucosal fold at its orifice not unlike that of the pylorus. The condition of gastroptosis was present in this cadaver.

3. Fleischmann (1815). Specimen 3, male, 28; drowned. The ductus pancreaticus and the ductus choledochus opened separately, each through a small duodenal diverticulum. Lying near these diverticula there were a third, the size of a pigeon's egg, and in the caudal first portion of the duodenum still another smaller, though similar, diverticulum.

4. Albers (1844) mentioned one diverticulum located in the horizontal portion of the duodenum. It was scarcely one inch long, and presented a contracted orifice with a marked fold of mucosa.

5. Jach (1899). Specimen 2. Immediately caudal to the pylorus a cylindrical diverticulum with a mouth large enough to admit the thumb extended 3 cm. caudally, dorsally, and medially from the first portion of the duodenum. Because of its cephalad position, this diverticulum had no relation either to the major duodenal papilla, though the opening of the diverticulum was on the same side, or to the head of the pancreas. The diverticulum was covered with loose connective tissue.

6. Jach (1899). Specimen 3; male, 58; carcinoma of the rectum.

In the first portion of the duodenum, 2 cm. from the pylorus, there was an obliquely placed cicatrix. Between this and the pylorus an orifice large enough to admit one finger opened into a spherical diverticulum 1 cm. deep, the fundus of which passed cephalad to the pylorus. Its dorsal surface was not covered with pancreatic tissue.

7. Falconer (1907). Male, 54, died of self-inflicted gunshot wound. A diverticulum present arising from the greater curvature of the pyloric canal, three-fourths inch long and three-fourths inch in diameter. A smaller diverticulum present just beyond the pylorus on the upper wall of the duodenum, one-half inch in diameter and one-half inch long. There was a ring of hypertrophied muscle, especially the circular muscle, but also the longitudinal around both diverticula. A section of the diverticula showed all coats of the stomach and duodenum. There were no adhesions or signs of inflammation.

REPORT OF OUR CASE

This patient was subjected to the usual thorough routine examination, but all negative findings are excluded in this history.

Mrs. E. M. entered the University Hospital on the division of Dr. A. A. Law of the surgical service of Dr. J. E. Moore on June 10, 1916.

History: Age, 32; has one child nine years old. Patient has been nervous and irritable the last two years. Occasional severe headaches. She does her own housework. Her weight varies; usually about 135 pounds; at present, 145 pounds. She has always been bothered with indigestion. Appetite fair. In childhood, as far back as the patient can remember, she has had so-called bilious attacks, and abdominal pains with nausea and vomiting, and on several occasions her mother told her she was jaundiced. At the age of eight years she had a very severe attack, which kept her in bed for six weeks. From the age of eight to twenty years the patient has had slight pains over the right side of the abdomen at intervals of six months or a year. These

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

were colicky in character, not associated with nausea, vomiting, jaundice, constipation, or fever. There is no history of attacks of diarrhea. At twenty a similar attack occurred as on previous occasions, but exaggerated, the patient being confined to bed.

From the age of twenty to two years before her admission the patient has had similar slight attacks at intervals of six months or more. Vomiting has only been occasional, but nausea has been more frequent. For the last two years the symptoms have become more frequent and aggravated. The patient is not free of symptoms for more than two or three days at a time. Sometimes the pains have been colicky in character, starting over McBurney's point, radiating about the right lumbar region to the back. These pains last for about one and a half hours, and the patient has to go to bed.



Fig. 1. Before operation. The shadow of the diverticulum is shown arising from the duodenum just below the pylorus.

There is no history of hematemesis or melena. The patient sometimes wakes up at night with pain in the epigastrium. This pain may come on an hour after eating, lasting until the next meal. This is relieved by taking soda bicarbonate or food.

Physical examination: The patient is a well-developed and well-nourished woman. There is very definite muscle rigidity; spasm, and tenderness over the right of the epigastrium; more marked just to the right of the midline, 4 cm. above the umbilicus. The stomach, distended with gas, reaches 5 cm. below the umbilicus. Ewald one-hour test-meal before operation. Amount 40 c.c., dark brown. Total acid 72; free, 36, determined by using phenolphthalein and dimethylaminoazobenzol. The hydrogen ion concentration, determined by the gas chain method (by G. L. M.), equals $.26 \times 10^{-1}$ or p-H equals 1.6. Röntgenogram (Fig. 1) before opera-

tion. There was also a small six-hour residue at this time.

Operation (by Dr. Ritchie), June 30, 1916. Right rectus incision. The stomach and duodenum were quite markedly distended with gas. On the anterior surface of the duodenum, near the superior margin, there was a stellate scar, slightly hemorrhagic around its borders, typical of a chronic ulcer, which involved the portion just caudal to the pylorus. The pylorus was patent, admitting the tip of the index finger. Just below the pylorus on the lower side of the duodenum, there was a diverticulum, 5 cm. in length and 3.5 cm. in diameter, distended with gas. This was egg-shaped with a narrow isthmus that easily admitted the tip of the finger. Surrounding this opening into the sac was a hypertrophied ring of muscle. The wall of the sac was par-



Fig. 2. Three weeks after operation, showing a half-moon shadow in the region of the diverticulum. A posterior gastrojejunostomy and a partial plication of the diverticulum was done.

tially invaginated by plication. The scar of the ulcer was invaginated with a few Lembert stitches. A typical short-loop posterior gastro-enterostomy was done, using interrupted linen and chromic catgut sutures.

The interesting points to be discussed are the origin of the diverticulum, its relation to the duodenal ulcer, and the selection of operation.

Diverticula arise, according to Buschi (1911), least frequently in the stomach, followed in order by the duodenum, pharynx, esophagus, ileum, and colon.

Chomel (1710) first described a duodenal pocket in a woman eighty years old, situated at the junction of the duodenum with the bile-duct,

and containing twenty-two stones. The first typical duodenal diverticulum was described by Morgagni (1761).

Diverticula have been classified by most authors as congenital and acquired. These may be subdivided into true and false. A true diverticulum presents in its walls all coats of the intestine. In the false variety the muscularis is wanting, the walls then being formed by mucosa and submucosa. The presence or absence of peritoneum depends upon whether the diverticulum is on the free surface or on the mesenteric border projected between the two layers of mesentery.



Fig. 3. Three months after operation. The diverticulum is well filled with bismuth.

Both true and false diverticula may be produced by traction from tumors of adherent organs, in ptosis especially by the ductus choledochus (Keith), by scar tissue, or atrophy of the pancreas (Roth, Edel).

Klebs (1869) considered false diverticula as herniations of mucosa through the muscularis produced by traction on the mucosa, by blood-vessels piercing the muscularis. This relation of diverticula to the blood-vessels has been corroborated (Edel Hansemann, Hanau, Fischer, Davis, Gordinier, and Sampson and Fischer), although pulsion has been found of more importance in its origin than traction. These writers describe pul-

sion diverticula of the false variety as hernial protrusions of the mucosa related to the veins along the mesentery, perhaps associated with some predisposing cause, as muscular weakness. Graser, in addition, emphasizes the relation of the non-mesenteric false diverticula to the veins. He states that a relaxation of the venous sheaths is produced by blood-vessel stasis, which predisposes to diverticula.

These authors noted further that, in experimentally produced diverticula by filling the intestines of cadavers with water, they ruptured regularly into the mesentery. Chlumsky (1899) found



Fig. 4. Three months after operation. Four hours after a barium meal there is a shadow of the barium still present in the region of the diverticulum.

upon the living animal, contrary to the previous results, that the rupture occurred opposite to the mesentery, never into it, but that ten or more hours after death the intestines ruptured into the mesentery. Beer (1904) says there is no weak place at the mesentery, and that Chlumsky's results are corroborated by clinical findings in ileus, where the peritoneum and muscle, usually the circular, tear first opposite to the mesentery.

Beer and Telling (1908) state there must be a change in the resisting powers of the intestinal wall, because diverticula exist particularly in old people whose intestines are more or less worked out; therefore, there must be a muscular weakness which accounts for the diverticula. Large

areas of weak muscle wall form true diverticula; small areas, the false. These findings, the authors state, correspond to the close relation of the blood-vessels to the diverticula; the venous sheaths simply point the way. Wilson (1907) describes areas of marked thinning of the muscle even where no diverticula have developed. Relaxation of the duodenum and fatty degeneration of the muscularis have also been advanced as predisposing causes. (Roth, 1872.)

Several factors point to a congenital origin for true diverticula of the duodenum. In most of them there is an absence of any pathological condition, such as ulcers, tumors, stones, worms, adhesions, or changes in the intestine, liver, or pancreas. A case of Shaw's, cited by Buschi, was undoubtedly congenital with atresia of the duodenum. In embryos of thirty to sixty days the duodenal lumen is normally more or less obliterated. The proliferation of epithelium early produces vacuoles or pits. The outer surface of the epithelial tube is generally smooth, but frequently the masses of cells surrounding the vacuoles produce local bulgings of the basement membrane. Later the vacuoles confluence to re-establish the lumen. (Keibel and Mall, 1912.)

The case which we report is exceptional because of the presence of a large evident duodenal ulcer, which, though entirely separate, must be taken into consideration when discussing the cause of the diverticulum. The history goes back to early childhood, which suggests the possibility of congenital origin. It is readily conceivable that a diverticulum in any part of the duodenum may find its beginning in one of the embryonal vacuoles which failed to confluence. The internal pressure of fluid may in time cause this vacuole to become pathological. Buschi, however, observes but little tendency to the formation of diverticula by internal pressure from stasis because of the fluidity of duodenal contents, and believes that stasis would need to be of high grade in order to produce them.

The opening of the diverticulum was nearly, but not exactly, opposite to the ulcer. Recent studies in röntgenography by Carman (1916) and others show that in duodenal ulcer a spastic incisura of the duodenal bulb, produced by a spastic contraction of the circular muscle fibres in the plane of the ulcer, is frequently shown in the röntgenograms as an indentation of the opposite curvature. We suggest that this spastic incisura, as well as the relaxation of the duodenum with ptosis, would predispose to the development of a

diverticulum, particularly cephalad to the incisura. Such an explanation would fit our case, and could, we believe, be applied to the third specimen of Jach's (1899), where there was an oblique cicatrix 2 cm. from the pylorus, and between these arose the diverticulum.

SELECTION OF OPERATION

The situation presented a nice surgical problem. An excision of the sac was first considered. The opening of the diverticulum was found on the under and lower side of the duodenum, which would lead the operative field towards the pancreas and at the lower end of the sac to a point extraperitoneal. It would have involved removing some part of the lower side of the duodenum without the possibility of recovering with peritoneum. Since reviewing the anatomy and the several theories of origin, the possible close association with blood-vessels would have rendered such excision a dangerous procedure owing to the possible interference with the blood supply to the duodenum. The deciding point at the time against excision was chiefly a mechanical one of re-peritonization. A Finney pyloroplasty would have led the opening of the stomach into the sac, and it was impossible to get far enough under to attain a good peritoneal base, while the muscle suture would have gone through tissues of questionable viability.

A pylorectomy would have been the proper procedure, and, though we desired the specimen, another mechanical obstacle arose, which was the question of room for invagination of the duodenum without involving the ampulla. Possibly this objection was fanciful, but as the sac extended for two inches along the side-wall of the duodenum, such a catastrophe had to be considered. There was, in view of the higher mortality of pylorectomy, also the probability that more conservative measures would be sufficient. These were undertaken as above described.

Subsequent History: An immediate and uneventful recovery followed the operation. On the twenty-first day the second röntgenogram was taken (Fig. 2), and shows the diverticulum obliterated except for a half-moon shadow, which may be interpreted as a part of the cavity still open. Symptomatically, the patient at this time, three months later, has not been so free from pain and discomfort in years. The third röntgenogram (Fig. 3) was taken three months after operation. Other röntgenograms, four hours after a barium meal, made at this time showed a

portion still remaining in the stomach and a small oval shadow in the region of the diverticulum (Fig. 4.) Immediately following there was an attack of nausea, and vomiting of acid stomach-contents. This was quite transient, and was relieved by antacids. This attack may, however, be a precursor of future trouble.

In conclusion, we will outline briefly the unusual features of the case.

First, the diverticulum was demonstrated at operation; secondly, the unusual size, it being one of the largest reported; thirdly, the position in the first portion of the duodenum just below the pylorus; and the last and most important feature, it is the only case reported where a diverticulum was found in close proximity to an ulcer of the duodenal bulb.

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DISCUSSION

DR. CHARLES H. MAYO (Rochester): In this particular case the diverticulum of the duodenum is one of the largest of which I have seen a skiagraph. It is a remarkable case, and the relief obtained by gastroenterostomy has been so perfect as to justify treatment in that manner without removal of the diverticulum itself. The question for the future to decide is whether the diverticulum will shrink or whether trouble will occur later.

DR. McWHORTER (closing): Thinking that possibly the röntgenologists might have observed cases of duodenal diverticula not reported under that heading, I spoke to Dr. Bissell, the röntgenologist at the University Hospital. Since the preparation of this paper Dr. Bissell gave me a letter from Dr. Case stating that he has observed about fifteen diverticula of the duodenum occurring for the most part in the third portion. He refers to an article in the June *American Journal of Röntgenology*. In that issue he reports eight cases of real diverticula of the duodenum; none were, however, in the first part. Both Case and Carman (1916) state they have observed röntgenologically a sort of diverticulum, or pseudodiverticulum, from a duodenal ulcer, associated with the scar or with pericholecystic adhesions.

Concerning the clinical symptoms of duodenal diverticula: We know that they have not previously been generally recognized. Bauer discussed them clinically since two of his patients died indirectly from diverticula of the descending duodenum. One patient, having persistent vomiting and emaciation, was operated on for a pyloric insufficiency, a gastrojejunostomy being done. Severe vomiting commenced on the third day following operation, and persisted until death, on the eleventh day. At necropsy a large diverticulum was discovered (it had not shown on röntgenoscopy) and also a pneumonia of several days' duration. In Bauer's other case a hemorrhage into an intrathoracic struma had caused the death of a patient with icterus. At necropsy biliary stasis was found to be due to an inflammation of a diverticulum involving the ampulla of Vater.

In our case, clinical symptoms might easily have been produced by the traction of the diverticulum on the pylorus and bulb and by pressure upon the adjacent duodenum or upon the bile-duct with attendant stasis.

The interesting point in our case is the position of the diverticulum nearly opposite to the ulcer. Since the ulcer mechanically would produce little stasis of the fluid contents of the duodenum, I think a spasm of the circular muscle might predispose largely to the diverticulum.

Baldwin has shown that diverticula of the duodenum, except in the first portion, are not relatively uncommon, since he discovered fifteen cases out of one hundred and five cadavers. Consequently, with the more frequent use of röntgenoscopy in cases presenting abdominal complaints, we shall expect to see more duodenal diverticula observed in the future.

RECENT ADVANCES IN OUR KNOWLEDGE OF THE ACTIVE CONSTITUENT OF THE THYROID: ITS CHEMICAL NATURE AND FUNCTION*

By E. C. KENDALL, Ph D.

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The isolation in pure crystalline form of the active constituent of the thyroid has already been reported elsewhere.

Given a uniform starting material, the separation of one gram of pure crystals from one thousand to fifteen hundred grams of desiccated thyroid is now a comparatively easy matter. I now have about six grams of the product in the purest form and with this amount it will probably be possible to determine the structural formula of the substance. The exact structure of the compound has not as yet been determined because we have been interested in its physiological action, so that a large amount of the material and practically all available time has been spent in an attempt to determine the function of this substance within the body.

In preliminary reports I have already stated that injection of this material into an animal causes no immediate effect: there is no increase in pulse-rate, no drop in blood-pressure, and metabolism is apparently unaffected for a number of hours. In order to produce the most striking effects it is necessary to give successive daily injections. At the end of the fourth or fifth day the animal presents the picture of so-called hyperthyroidism. Having established this general conception, steps were taken to determine whether a condition could be produced in which the animal would react more quickly or more vigorously. It has long been known that the thyroid affects protein metabolism. It therefore seemed probable that the injection of amino-acids with the thyroid should produce a greater effect than the injection of the thyroid alone. This was done, and it was found that if the injection of thyroid is accompanied with an injection of amino-acids a more violent reaction occurs within the animal. An acute condition is produced, accompanied by possible tetany, and an extremely high temperature, which is followed shortly by death. For each animal injected there seemed to be a minimum rate of injection below which the animal did not respond. Unless this minimum rate was exceeded there appeared to be retention of nitrogen, no increase in temperature, and a passive condition of

the animal accompanied by an extremely acid and suppressed flow of urine. If the injection of amino-acids was below the minimum and the animal was not responding, even though almost dead, by doubling or tripling the rate of injection the reaction described above could be produced, the acid condition of the urine would be relieved, and the flow would be greatly increased. So long as the capacity for absorption of amino-acids was not passed the animal did not respond to the injection of thyroid, but, if this capacity for absorption was satisfied, then the thyroid in the presence of what may be termed excess of amino-acids would bring about a violent reaction. We investigated the factors controlling this capacity for absorption, and sought for an indicator which would tell approximately this capacity for each animal. The most important factor affecting the capacity for absorption was found to be the diet. Meat-fed dogs whose feeding had been pushed to extreme, had the highest capacity for absorption. It was impossible to inject amino-acids fast enough in these dogs to bring about a reaction with thyroid. We therefore tried starvation; and under this condition the maximum effect was produced. Starvation caused the tissues of the animal to be in a readily reactive condition for the injection of the amino-acids, and a much lower rate of injection is sufficient to bring about a marked reaction. Old animals, poorly nourished, were found to have a much lower capacity for absorption than young, well-nourished animals. The influence of age suggests that the thymus is possibly a factor in controlling the capacity of the tissues for the absorption of amino-acids. Another factor which influences this capacity is the amount of water injected with the amino-acids. This, of course, depends upon very deep-seated reactions dealing with the hydration of the tissues, but it was found that the more concentrated the amino-acids injected the more severe the reaction. When it was apparent that this capacity of the tissues for absorption must be considered in the explanation of the action of the thyroid it seemed desirable to find some test which could be used to determine the relative capacity for absorption of amino-acids in different animals. If a substance could be found which

*Abstract of paper presented before the Minnesota State Medical Association, Minneapolis, October 12-13, 1916.

would be absorbed by the tissues under the same conditions in which amino-acids are absorbed, we would have a criterion which could be used to secure this most important information. The substance which first suggested itself was sulphophenolphthalein. This has been used as a test of kidney-function. The emphasis has been placed upon the kidney as the chief factor controlling the output or retention of the compound. Our attention is first drawn to the kidney because all the substance which is excreted must pass through this organ.

But the question arises, Is the kidney the greatest factor involved? Sulphophenolphthalein has been used for a long time, giving most valuable results as a test of kidney-function, but can it not tell us more than the condition of the kidney? Is it not probable that it is a test for the specific absorption capacity of the tissues? So long as its injection into an animal and its rate of excretion is measured under normal conditions, and there is no accompanying reaction which can be used as a criterion, the influence of the tissues on the retention of sulphophenolphthalein cannot be followed. In the active constituent of the thyroid is a reagent which can be used to demonstrate the presence of amino-acids existing in excess of what may be called the capacity for absorption by the tissues. Therefore, if the phthalein output parallels the intensity of the reaction to thyroid following the injection of amino-acids we have a method which demonstrates the capacity for absorption of the tissues rather than the inability of the kidney to excrete phthalein. Our results, in short, show that in those animals which have a high phthalein output the capacity for absorption of amino-acids is low, and the reaction to thyroid is most violent. In those animals which have a very high capacity for absorption and therefore do not react with thyroid, the

phthalein output is extremely low. Furthermore, if an animal has a low capacity for absorption and a vigorous reaction between the thyroid and amino-acids is going on, and if the injection is long-continued, a certain maximum of reaction is reached. Beyond this maximum there begins to be retention of nitrogen, slow suppression of the urine and a change in the reaction of the urine from neutral or slightly alkaline to distinctly acid to litmus. Throughout the entire course of the experiment the severity of the reaction in the animal is closely paralleled by the retention of sulphophenolphthalein.

This report is a preliminary one, but results seem to justify the tentative conclusion that the sulphophenolphthalein test is not only a test of kidney-function, but it tells us a great deal more. It is a test for the specific capacity for absorption of the tissues of the body.

The function of the thyroid appears to be involved in that particular stage of metabolism which follows the break-down of proteins into amino-acids or the liberation of amino-acids which have been in an "absorbed" condition. Whether or not the thyroid is also involved at a similar point in the metabolism of fats and sugars, has not been determined, but it is at least probable that it is so. The actual result of the reaction of amino-acids and thyroid whether it is deamination alone or decarbonization alone, whether either one or both simultaneously, is not at present known, but it seems certain that the thyroid is not directly involved in the break-down of proteins to amino-acids and that the activity of the thyroid in the body is limited and controlled by the condition of the tissues, and their capacity for absorption of amino-acids, other metabolites, and the products of metabolism.

FOR DISCUSSION SEE PAGE 368.

THE HISTOPATHOLOGY OF THE AUTONOMIC SYSTEM IN GOITER*

BY LOUIS B. WILSON, M. D.

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The author has previously reported¹ on the histologic study of sympathetic ganglia from twenty-eight patients with exophthalmic goiter and from many control cases. He has found in all exophthalmic goiter cases examined various degrees of degeneration in the nerve cells of the cervical sympathetic ganglia, which, in stage and intensity, are parallel to the stage and intensity of the symptoms and to the hyperplastic and regressive changes in the thyroid. The present report confirms the preceding observation by the study of Borne wax reconstructions made by Mr. T. O. Young, of the University of Minnesota, of groups of cells in serial sections. Ten such reconstructions are presented with detailed descriptions.

The material studied is all from patients so young as to preclude the possibility of senility as a factor in the changes observed in the ganglion cells. The material was all in excellent condition when preserved. The methods of preservation, preparation, and reconstruction eliminate technical artefacts.

A study of the distribution of the cell-changes in the groups illustrated shows that in every group there are cells which are apparently capable of function, though in some instances this may be somewhat impaired in all the cells. At the same time in each group there are also cells which are apparently totally incapable of function. These two forms are in close relationship to each other. If we conceive of a distant muscle fiber or group of thyroid epithelial cells as controlled by a neurone, of which the ganglion cells of the functioning type are a part, then we must conceive of such fiber or glandular epithelium as capable of being stimulated and, unless otherwise prevented, of functioning. Conversely, muscle fibers and glandular epithelial cells receiving their nerve supply from neurones of which destroyed ganglion cells are a part, can not receive their stimuli to function through such neurones. Unless another neurone vicariously assumes the function of the one in which the broken link exists, the muscle fiber or glandular epithelium must

perforce go out of commission. The fact that functioning ganglion cells are in immediate proximity to nonfunctioning cells is in close harmony with the fact that in exophthalmic goiter we have muscle fibers and thyroid glandular epithelial cells in advanced stages of degeneration in immediate proximity to others of their kind which are apparently normal. That the changes in the ganglion cells may be secondary to primary changes in the muscle and glandular epithelium is rendered improbable by the fact that similar changes are not found in cervical ganglia of patients from whom a lobe of the thyroid has been totally removed for many months. Atrophic changes in the ganglion cells from ablation of the distant organ controlled by neurones of which the ganglion cells were a part are very different from the granular degeneration seen in cases of exophthalmic goiter. Nor do the changes seen in ganglion cells of persons of advanced age at all closely resemble those herein illustrated; indeed there is every resemblance in the changes in the cervical ganglion cells in the spinal cord in anterior poliomyelitis to the changes in the cortical cells of the cerebrum in meningitis. They may best be explained on the hypothesis of a specific primary infection of the ganglion itself.

DISCUSSION ON THE TWO PRECEDING PAPERS

DR. A. D. HIRSCHFELDER (Minneapolis): It is a great pleasure to have the opportunity of discussing these really magnificent papers, but in a very limited time it is absolutely impossible in any discussion to do justice to such papers or to even sketch out the fields which they have opened up.

One would hardly realize, perhaps, from the very modest presentation that Dr. Kendall has made in briefly mentioning the crystalline compound which he has used for the basis of this paper, that the isolation of this substance which was accomplished by himself a year or so ago, was a problem which baffled the physiological chemists of the world for decades. The nearest approach to it,—the isolation of an indefinite substance *iodothyryn* by Baumann twenty years ago,—was heralded as the greatest advance that had been made in our knowledge of the physiological chemistry of the thyroid. Dr. Kendall has gotten the active principle pure, and has taught us a great deal about its nature.

The formula which Dr. Kendall has found for this substance gives us a real insight into the practical importance of modern chemistry and physiological chemistry from the standpoint of practical medicine. He has found that it is a derivative of indol. In this respect it bears considerable relation to the substances which

*Abstract of paper presented before the Minnesota State Medical Association, Minneapolis, Oct. 12th, 1916.

1. Wilson, Louis B., and Durante, Luigi: Changes in the superior cervical sympathetic ganglia removed for the relief of exophthalmos. Jour. Med. Research, 1916, xxxiv, No. 3, 273-296.

develop when we have protein putrefaction in the intestines.

It has been shown by Dale and his coworkers that many of the substances allied to the ptomaines, and also the substances which are produced by at least three of the glands of internal secretion,—the adrenals, the hypophysis, and now the thyroids,—are formed by the glands within the body as a result of the splitting down of proteins. An additional reaction does occur in the formation of ptomaines from the amino-acids, split products of proteins, namely, simply the splitting off of carbonic acid from the amino-acid, and this at once converts the substance from a relatively inactive substance to a substance which stimulates nerves and smooth muscles and gives reactions like those of adrenalin, ergot, and pituitrin.

Dr. Kendall has shown us a similar relation to the physiology of the thyroid in the formation of this indol derivative, and we can see at once, since the thyroid is one of the greatest nerve poisons, why a similar chemical phenomenon going on in the intestine with the formation of indol derivatives and of other similar amines, split down from amino-acids, should be one of the things which we find so frequently associated with nervous outbreaks in nervous persons and in the insane, and also why indol appearing in the urine may be associated so frequently with attacks of headache and high blood-pressure in a great many obscure so-called autointoxications.

That is one phase, with innumerable ramifications, which Dr. Kendall's search has opened up.

It would seem to follow, more or less as a corollary from his work, and no doubt by this time he has undertaken it through the discovery of the fact that the administration intravenously of amino-acids will accelerate and increase the thyroid action, that this property may be made use of for an immediate quantitative test of thyroid activity. It might be possible to determine simply the mixture of amino-acids and thyroid which, injected intravenously into the normal individual, would fall just short of giving a reaction, and this ought to furnish a very delicate test to bring about an increased thyroid activity in those persons who have those very mild forms of thyroid activity which we call the atypical forms (*formes frustes*).

DR. L. G. ROWNTREE (Minneapolis): We rarely have an opportunity of obtaining so broad a view of any subject as we have had here this morning. Dr. Kendall has made what is to my mind probably the greatest discovery in the chemical side of medicine since the beginning of this century. He has been very modest about it. His discovery is great in itself, and it has opened up tremendous problems in the field of metabolism.

The surest and shortest road to rational treatment of any clinical condition is through the reproduction of that condition in animals in the laboratory, where it can be studied at leisure and at will. Any line of treatment can be followed, and followed to a definite conclusion. I believe that Dr. Kendall's work may make it possible for us to develop more successful prophylaxis and more rational and successful treatment in our thyroid cases.

Dr. Wilson has presented a magnificent study of the nervous changes associated with or underlying changes in the thyroid. For some time past we have known,

particularly from the work of Eppinger and of Myer, that the nervous system played a definite rôle in the subject of thyroid intoxication. Their study, however, related more to the functional side. Dr. Wilson has presented a thorough and complete study of the organic changes occurring in the nervous system, particularly in the autonomic nervous system.

Dr. Plummer has furnished us with clinical pictures, bringing them into relation with these functional, physiological, and pathological changes.

On my first visit to the Congress of Physicians some years ago I heard Dr. Wilson and Dr. Plummer talk, and they were talking about thyroid at that time. The work made a definite impression upon me. I have heard them talk several times since on the same subject. Between their talks they seem to work, and although the subject is frequently the same, the substance of their talks is always new and valuable.

Here in Minnesota we can feel the greatest pride in this work which is "home made," so to speak. I was wondering what the feelings of Basedow, Graves, and Parry would be had they been able to get this glimpse of the disease which they independently described some eighty to a hundred years ago. These are real contributions which have come from the Rochester Clinic, and many of the best contributions made to medicine in the last decade in regard to thyroid intoxication have come from Minnesota.

The matter of absorption by the cells of the body, touched upon by Dr. Kendall, is a very fundamental problem, and it is a tremendous problem. About a year ago I became interested in it. I was attempting to study blood volume, introducing dyes and determining their dilution at the expiration of five minutes, at which time the dye has become uniformly distributed throughout the blood. I tried the phthaleins, and to my surprise I found that they disappeared from the bloodstream almost immediately, in fact over 90 per cent of the phthalein disappeared from the blood within ten minutes. Where did it go? I was at this point of the investigation when I found that vital red answered the needs of the problem very well. The University of Minnesota Medical School upset my plans at this time and I have not since had an opportunity to get back to the problem of the fate of the phthalein on leaving the vascular system. I know that phenosulphonephthalein is good for many things. It can be used for many purposes. It is a great pleasure to see it take on added value. I cannot feel that Dr. Kendall's explanation entirely solves the problem. Dr. Kendall will have to face one phenomenon which is of considerable interest. He may find some difficulty in explaining the failure of phthalein to appear in uremia at times on the basis of increased absorption by the tissues. In certain cases of uremia, and before death in many other conditions, we have a recognized increase in metabolism, at times with low phthalein output, but, on the other hand, we have in many cases of Graves' disease an extremely high phthalein output and a low Ambard's constant. Here with an increased metabolism, which is beyond question, we have a high phthalein output associated with increase in renal function as indicated by the constant of Ambard, so that we have conditions in which, with an increase in metabolism, there is no increase in the absorption of phenosulphonephthalein by the tissues, since it is excreted by

the kidneys in quantities which are normal or greater than normal.

I would like to ask one question of either Dr. Wilson or Dr. Kendall. What do they consider the initial change in the production of thyroid intoxication? I would like to know the sequence of events as they see them.

DR. KENDALL (closing the discussion on his part): I fully realize the problem which is opened up in the study of the absorption phenomena of the tissues. When we get through with it we shall really know the summation of physiology.

In regard to the changes that Dr. Rowntree speaks of: Where there is a catabolism of the tissues and a high phthalein output, and also in the condition of exophthalmic goiter, there is an unknown factor which is at work. We know that sugar, sodium citrate, sodium sulphate, sodium chlorid, and other mineral salts have a great influence on the phthalein output and the absorptive capacity of the tissues. Now, it is not probable that the phthalein retention is identical with the retention of other things, but it is a very good index.

It seems to me that in exophthalmic goiter one condition which must be present, whether it is primary or not, is the large excess, relatively speaking, of things with which the thyroid can react: amino-acids, sugars and fats, that is, metabolites, just ready for oxidation.

There is something in the body which maintains the low degree of absorption for the tissues. That must be true because giving thyroid to a normal person very rapidly brings about a condition in which there is a very high degree of absorption. So it is more than the thyroid that is working. It is something that is keeping the tissues in a reactive form, and I think this fundamental aspect of hyperthyroidism will go far to explain where the primary lesion lies.

Whether the trouble is in the sympathetic nervous system or elsewhere, we, of course, do not know, but if you keep your finger on conditions affecting the reaction capacity of the tissues I think you will be very close to an explanation of the primary lesion in exophthalmic goiter. An explanation of the continuation of hyperthyroidism is to be found in something which keeps the tissues in a reactive condition rather than allowing them automatically to stop. That happens in the normal person. If large amounts of thyroid are given to normal persons they will themselves get into a condition where they no longer react. Therefore the thyroid hormone alone is not sufficient for thyroid activity.

DR. WILSON (closing on his part): The question

which Dr. Rowntree has asked is the final one towards the solution of which we are working. The answer cannot be given now. When it can be given we shall be through with the work on the pathology of goiter. There are some facts, however, which may be mentioned. First of all, we started in from the morphological standpoint and studied the conditions which were occurring in the thyroid itself, and those we showed. Next we studied the muscular system, though that was not the next step in the chain. When you consider that the thyroid gets its entire nerve supply from a single plexus, and that that plexus is made up from branches from the superior, middle, and lower cervical sympathetic ganglia, you can see that all the function of the thyroid must be determined by these three ganglia. They are not the originators of things necessarily: they are only part of the neuron, and back in the central nervous system, in the cord, in the brain perhaps, may lie the lesion which is primary so far as the neuron itself is concerned. However, Cannon has shown that he can produce a condition of exophthalmic goiter experimentally by simply stimulating the nerve supply of the thyroid itself through the sympathetic ganglia. If, now, we can get a stimulus which is constantly and persistently acting on the cervical sympathetic ganglia, we certainly, theoretically at least, can get an overfunctioning of the thyroid itself.

That this will make all the symptoms of exophthalmic goiter, in the light of Dr. Cannon's experiments, is probably not true. Dr. Cannon has had a good many failures in his attempt to produce the symptoms of exophthalmic goiter by mere stimulation of the thyroid. It is only occasionally that he gets them, and the reason for that may not be trouble with his operations at all, but the trouble may lie in certain conditions, as the variation in the factor of safety, or, as Dr. Kendall puts it, the factor of absorption in the general metabolism of the animal. Though we were perfectly able to produce once in a while the symptoms of exophthalmic goiter by injecting the bacillus of influenza into the superior cervical sympathetic ganglia of a normal animal, I doubt very much if we could do it every time because of the variations in the same factor.

But let us assume for the sake of the argument that it is possible to get a specific invasion of the cervical sympathetic ganglia with the bacillus of influenza, which has the widest distribution of any other hypothetical organisms, if you please, that it stimulates the ganglion cells and stimulates the whole neuron, and that this in turn stimulates the function of the thyroid itself, and then that sometimes coincidentally with this there may occur the optimum conditions of reaction—then we may get exophthalmic goiter.

TUBERCULOSIS OF THE SPINE: END-RESULTS OF OPERATIVE TREATMENT*

BY MELVIN S. HENDERSON, M. D.
ROCHESTER, MINNESOTA

In order to obtain the best results, the Hibbs and Albee operations for tuberculosis of the spine should be done early before any great amount of deformity appears. Patients in the advanced stages of the disease and already debilitated by tuberculosis of the lungs should not be operated on. From July, 1912, to July, 1916, 274 cases of tuberculosis of the spine have been observed in the Mayo Clinic. Eighty-one patients were operated on, 74 according to the method of Albee, and 7 according to the method of Hibbs. Seven of these patients are known to have died some time after the operation. Two of them were cured of tuberculosis of the spine, but died of miliary tuberculosis of the lungs. Three of the patients were treated too recently to warrant a report as to the results, and 5 could not be traced. Seventy-three, therefore, constitute the basis of the percentages. Thirty-one (42.4 per cent) were cured, and 33 (45.2 per cent) relieved. There were no operative deaths.

The majority of the patients were adults. Children are easily controlled on a frame and should be operated on only after careful consideration.

DISCUSSION

DR. CHARLES A. REED (Minneapolis): I wish to particularly express my gratitude to Dr. Henderson for the end-results he has given. When this operation of artificial ankylosis of the spine first came out it seemed as though it furnished the solution of most of the problems of Pott's disease, and, of course, it became a fad; however, some of our most conservative orthopedists have not taken up the operation at all, while others have operated almost indiscriminately.

We know that we get brilliant, immediate results with this operation, but what we want is a frank statement of ultimate results. The statistics of seventy-three followed-up cases are valuable. The average age of Dr. Henderson's cases was given as twenty-five years. This brings up an interesting point as regards his statistics. Of course, twenty-five years is much older than the average case that comes to most clinics. Does this have any bearing on the author's final results? I think it may. I think it is usually conceded that Pott's disease in the adult runs a much more chronic course than in children; and the ordinary fixation methods are not as efficient in splinting the spine in the adult; moreover, the incompletely ossified spine of the child does not lend itself to bone-graft splinting as well as that of the adult. It would seem that this operation is particularly indicated for adults, and his results of 40 per cent cures and nearly as many relieved should take into consideration the unfavorable results of conservative treatment in adults and not be compared

to the results obtained in the conservative treatment of children.

I am not sure that the Albee operation is indicated in the case of most children, considering the favorable results from conservative treatment, but I have never seen an adult Pott's recover under conservative treatment; and these statistics make me desire to continue to perform the operation in the case of patients whose spines are completely ossified.

DR. EMIL S. GEIST (Minneapolis): There is one point I would like to bring out in connection with this paper. I have performed the Albee operation a number of times, and the specimens I have obtained afterwards have shown complete ankylosis as compared with results from Hibbs' operation. The damage to the leg is more theoretical than otherwise. Fixation is the thing we are after in tuberculous joints, and certainly Dr. Henderson's paper shows that absolute fixation as obtained by the ankylosis has produced benefit, because the doctor has followed the same rules laid down by Albee and others, and that is the reason his average age limit is so great.

In addition to what Dr. Henderson has said, I would like to say that there are certain regions of the spine in which it is almost impossible to fix the spine without such an operation, especially the dorsal region, and we get Pott's disease there. Here we have a movable portion of the spine. It moves all the time in respiration if we are operating in this region. The patient lies in a prone position or flat on the stomach, or he can be turned over. The patient has the widest range of motion of the spinal column, and it is for this reason that the disease progresses more rapidly here than in other places. We have more deformity in this region. The operation is eminently proper in this region in young children, because it happens to be a region which it is very difficult to fix by means of braces or apparatus. We have no force lower than the spine in the lumbar region and lower dorsal region. We can fix the spine by well-fitting braces and casts, but here it cannot be done unless we use a jury-mast, and it is almost impossible to get a patient to wear a jury-mast where we cannot get fixation, and the operation is especially indicated in this region.

DR. HENDERSON (closing): I have nothing further to add except to say that probably I did not make clear the point with reference to age. Our series of cases were of rather advanced age, the average being twenty-five. There are two reasons for this: In the first place, the material was not drawn from a children's hospital, but from a general clinic. In the second place, I believe children should always receive conservative treatment on a Bradford frame first and the operation be considered later. For some unknown reason, transplantation of bone in children is not as successful as it is in adults. Surgeons of experience will tell you that in operating on ununited fractures in children they are often disappointed as the graft absorbs. I have seen two cases of spinal disease in which grafts were placed, and at the end of a year the x-ray did not show any evidence of a graft. For this reason I believe we should cling to conservative measures with children.

*Abstract of paper presented before the Minnesota State Medical Association, Minneapolis, October 12-13, 1916.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

JUNE 1, 1917

A GOOD LAW—FEE SPLITTING

Our readers are urged to read Senate File No. 495, made a law by the late Minnesota Legislature, which prohibits the division of fees by physicians and surgeons. This law is in accordance with laws in other states, not many in number, it is true, but they have proven their moral efficiency, that is, they have kept a larger number of physicians from dividing fees with surgeons, and, if carried out in the proper spirit, it will cause no inconvenience to anyone, and it certainly will improve the morale of the profession. Incidentally, it will suggest to other states the necessity of such a law, and eventually the whole country will be educated to the impropriety of the division or splitting of fees. The law is as follows:

An act to prohibit the division of fees by physicians and surgeons.

Be it enacted by the Legislature of the State of Minnesota:

Section 1. It shall be unlawful for any physician or surgeon to divide fees with, or to promise to pay a part of his fee to, or pay a commission to, any other physician or surgeon or person who calls him in consultation or sends patients to him for treatment or operation.

Sec. 2. Any physician or surgeon who pays or receives any money prohibited by this act shall be pun-

ished by a fine of not to exceed one hundred (\$100) dollars or imprisonment in the county jail not to exceed ninety (90) days.

Sec. 3. In case a physician or surgeon shall be convicted of violating any of the provisions of this act, the State Board of Medical Examiners upon a first conviction may, and upon a subsequent conviction shall, revoke the license of the person so convicted, but such revocation shall be subject to the right of the person whose license has been so revoked, to appeal to the district court of the proper county on questions of law and fact.

Sec. 4. This act shall take effect and be in force from and after its passage.

It has been very difficult at times for the State Board of Medical Examiners to prosecute illegal practitioners, and it will probably be equally difficult to prosecute the man who splits fees, for this can be done in secrecy and without the patient or others knowing of the transaction; however, comparatively few men, no matter how lax they may be in their ethical sense, will dare to split fees in the face of such a law, and it will probably be a great boon to surgeons who have been in the habit of splitting fees, or, as they will say, have been forced into it. One or two convictions by the State Board of Medical Examiners, and perhaps an appeal to the district court and the retrial of a case in court will do much more to discourage the fee-splitter, but no man would like to appear on the public records as violating a law, and particularly one which involves the morals of the medical profession on the financial side.

An appeal is made to all physicians and surgeons to uphold the act and resolutely to refrain from temptation and violation of this provision.

The passage of this bill, and a few other good ones by the Minnesota Legislature, was not accomplished without a great deal of work on the part of its promoters, and it meant incessant watchfulness and frequent reminders to the senators and representatives that the law was sufficiently good to put on the statute books.

The average physician is not very much inclined to interview his senator or representative on a bill of this kind, and yet the credit for its passage is due largely to the work of a few who are specially interested in purging the profession of its disloyal members. These few men who interviewed the various committees which had the bill under consideration really spent a great deal of valuable time in explaining the necessity of such a law and incidentally showing the humiliation of the medical profession who are tempted to carry on a bad business policy.

THE MINNESOTA HOSPITAL ASSOCIATION

The last issue of THE JOURNAL-LANCET, May 1, contained a report from Mr. G. W. Olson, Superintendent of the Swedish Hospital, which was signed by fourteen hospital superintendents, who met at the Radisson Hotel to form an association and adopt a constitution and by-laws. This was followed by an informal dinner at six o'clock, at which the officers were elected for the ensuing year. Mr. Olson had had this hospital association long in mind, and he had listed one hundred and fifty-two hospitals in the state, thirty-six of which were represented at the meeting, and twelve others had sent in written applications for charter membership. This list of one hundred and fifty-two hospitals includes all kinds of hospitals, even the State hospitals for the insane, as well as hospitals in the Twin Cities, Duluth, and other large cities.

One of the objects of the organization is to standardize hospitals and to promote economy and efficiency in hospital management, as well as to look after the general welfare of the hospital and its workers. Incidentally, it will tend to eliminate some of the hospitals which fall so far below standard that they will not be recognized at all.

It is quite interesting to note that, scattered throughout the state, there are a number of hospitals, small in kind, but run on sound hospital principles, and even those of a few beds are in charge of trained and skilled nurses, who not only manage the hospital but look after the nursing force among the patients.

The membership of the Association is active, associate, and honorary, and in this way takes in the executives of hospitals, the trustees, and others who are interested in hospital work, the latter forming the honorary class. There will be as advisors an auditing committee, a membership committee, a nominating committee, a committee on legislation, and a committee on constitution and rules, which has already concluded its work.

In all probability another important question will come before this Association, namely, that of the closed or open hospital. There is a great deal of opposition to the open hospital. The closed hospital, that is, one governed and controlled, in which the patients are all treated by the hospital staff, is much better, not only for the patients, but for the hospital in general than one that opens its doors to all sorts of sur-

geons and practitioners. The closed hospital is an ideal hospital, but it is still academically discussed, and probably it will not be possible for some years except among a few private owners. It is an open secret that in many of the large hospitals of the larger cities there is much poor work done, too many operations are performed, and operations are performed by inefficient surgeons or so-called surgeons; and it is to remedy this gross wrong that the closed hospital is advocated. If our hospitals were endowed with a sufficient amount of money, as is the Henry Ford Hospital in Detroit, it would be an easy matter to conduct a closed hospital, for in such a hospital none others than the surgeon-in-chief and the chief in medicine have control of the surgical and medical cases. No outside physician is permitted to take his patients in and treat them himself. The patient must be turned over to the hospital absolutely, but if a private or denominational hospital should attempt to close its doors to outsiders, it would create a good deal of bitterness and the hospital would lose its business, for the medical and surgical men are not yet ready to turn over their work to a closed staff. The time may come, however, when it will be workable; but there is no fear that it is likely to occur within the next decade. A hospital must have a sufficient number of patients to maintain itself, and, unless there is a very generous feeling toward the staff, patients will not be referred by their physicians. This doubtless will be a matter for discussion by the Minnesota Hospital Association at its yearly meetings, and it is expected that some solution of this very serious problem will be worked out by them.

THE MINNESOTA PUBLIC HEALTH ASSOCIATION

This Association, of which Dr. I. J. Murphy is executive secretary, is, as we have said before, an organization kept up by public subscriptions and the sale of Red Cross stamps. Its attempt is to educate the people of Minnesota in regard to matters of sanitation and public health. Most of the work is carried on by the secretary, Dr. I. J. Murphy, and, apparently, Dr. Murphy writes some of the editorials which appear in the *Minnesota Public Health Association Journal*. He sums up in the May issue of the *Journal* what the Legislature did, and, as is not infrequently the case, his summing up is not altogether reliable. Of course, his relationship with the State Advisory Com-

mittee has been quite close, naturally so, but his relationship with the State Board of Health has not been close and cannot be under the present circumstances. Dr. Murphy has made himself quite conspicuous in his opposition to the Minnesota State Board of Health, and, during the time he was secretary of the Governor's Health Commission, he went out of his way to embarrass the State Board of Health, as everyone knows. He even went so far as to either take it upon himself, or perhaps was commissioned by some state official, to hunt up an executive officer for the State Board of Health, a matter with which he had absolutely nothing to do, and he even went so far as to offer a larger salary to the executive officer to be (that is, the man who would displace Dr. Bracken), a sum of from six to eight thousand dollars per year, knowing that the bill that was endorsed by the Efficiency and Economy Commission fixed the salary at forty-five hundred dollars per year. His requests, however, did not get very far, as his work was known in Washington and other places where he attempted to select Dr. Bracken's successor.

His statement as to the appropriations for the State Board of Health are entirely wrong, for he says, "with the exception of a special appropriation for infantile paralysis each year for the next two years, the State Board of Health has been limited to present activities." This is not true. The appropriations for the State Board of Health were materially increased this year, practically by twenty-four thousand dollars. The Senate Committee heard the members of the State Board of Health and its executive officer, and very courteously and generously extended the appropriation. Many of the suggestions and requests of the State Board of Health were turned down, as was expected, but with Dr. Murphy's misstatement that the State Board of Health received no increase in its appropriations, we simply feel that he is either trying to mislead the readers of his journal, or is willfully misrepresenting facts. He still has the idea that the State Board of Health should be co-ordinated with other departments, whereas, if he really knew anything about the situation, he would know that the State Board of Health achieved rather remarkable results with its previously limited appropriations, and when he states that the Senate was unanimous in the verdict that the State Board of Health should be reorganized he was again misstating facts and leaving out those who were opposed to any reorganization. The

same feeling, he says, was true in the House, that the State Board of Health should be reorganized; but, as a matter of fact, this was not so at all. The House showed its appreciation of the State Board of Health's work and very properly cut out all of the objectionable parts of the Senate bill. If Dr. Murphy knew anything about how the appropriations were managed for the State Board of Health, he would not for a moment inform the public that there was a waste of funds in any health work. This matter is carefully guarded by the State Auditor and the Secretary of State, so there is not a dollar wasted in the work of the State Board of Health.

Right here it might be pertinent to inquire how the funds of the Minnesota Public Health Association are guarded. Who directs the expenditure of moneys, who is responsible other than Dr. Murphy for the employment of nurses, and is the same care exercised in the selection as is exercised by other, and particularly by state boards, not voluntary boards?

Dr. Murphy's editorial does not sound very good to those who know something of the work of the State in its health activities, and the time has come when rather definite inquiry should be made into the expenditure of all moneys received by the Minnesota Public Health Association. They have approximately forty thousand dollars to expend. Is it all expended for educational work, or is a large part of it expended in the employment of nurses and employees of like nature? It is hoped that at the next meeting of the Minnesota Public Health Association this matter will be taken up, and a definite investigation be ordered relative to the expenditure of money and a very possible waste of large sums. THE JOURNAL-LANCET, therefore, asks that the directors of the Minnesota Public Health Association be informed on this subject and that this information be spread before the people of Minnesota.

THE NURSES AND ANESTHESIA

The State Board of Health of Kentucky, for some reason or other, probably because they thought they had the power, attempted to make it essential for a nurse giving an anesthetic to have a physician's license; in other words, that she must be a practitioner of medicine. The State Board of Health lost its fight, as it should. The Jefferson Circuit Court of Kentucky in the first trial of the case held that a trained nurse could not administer an anesthetic

without passing an examination before the Board and securing a certificate for the practice of medicine. The Court of Appeals, however, very properly reversed this decision. The question which was fought out was really whether the administration of anesthetics is practicing medicine within the meaning of the Kentucky statutes. The Court of Appeals decided that merely "giving the medicine prescribed by the physician in charge, who diagnosed the case and directed the manner and time and character of the medicine to be administered," is not practicing medicine. The State Board of Health insisted that, in the administration of an anesthetic, the person giving it must exercise judgment as to the amount given and in watching the patient to determine the effect, and that this came under the definition of the practice of medicine, but the court thought that such a view would require a license of every trained nurse.

It seems that this special nurse, Miss Hatfield, had been employed by Dr. Frank and had administered anesthetics in more than twelve hundred cases, naturally, under Dr. Frank's direction, and he, as a matter of fact, was the responsible party.

THE TRIP TO THE A. M. A. MEETING

Arrangements for trip from the Twin Cities to New York to attend the A. M. A. meeting are now complete, and the schedule is as follows:

Leave Minneapolis (Milwaukee Depot) Pioneer Limited, 8:00 p. m., June 1st.

Leave St. Paul (Union Depot) Pioneer Limited, 8:40 p. m., June 1st.

Arrive Chicago (Union Depot) Pioneer Limited, 9:00 a. m., June 2nd.

Leave Chicago (Grand Central Sta.) Washington Special, 10:45 a. m., June 2nd.

Arrive New York (23d St. Station) Washington Special, 2:35 p. m., June 3d.

The trains are the best to be found on any road, and the trip will be a delightful one throughout.

The low rates become effective from June 1 to September 30, and are effective 60 days after purchase of ticket. The round-trip price is \$55.20, and many choices of the return route are offered.

Stop-over privileges are freely granted.

Do not forget the date of departure of those who desire to go together:

June 1, 8 p. m.

MISCELLANY

THE CARE OF PATIENTS OF MEDICAL MEN CALLED FOR ARMY SERVICE

The Medical Preparedness Committee of the Hennepin County Medical Society passed the following resolutions concerning the care of the patients of Minneapolis (Hennepin County) physicians called into the service of the Government. We are glad to print these resolutions as indicative of the work of the profession, not only for the patients, but for the physicians who might, in the absence of such co-operation, return to their work without a single patient waiting for them.

RESOLUTIONS

Recognizing the urgent need now existing for medical men in the United States Army and Navy, and desiring, so far as we are able, to facilitate enlistments from the members of our profession and to conserve the practice of those who may be called into active service, be it resolved by the members of the Hennepin County Medical Society:

First. That any physician who shall be called in to attend the patients of any member absent on active service in connection with the war, shall turn over one-third of the fees collected from such patients to the physician in active service or to the members of his family.

Second. That the secretary of the Society shall have prepared letter-blanks, according to the form attached, to a number sufficient to supply those physicians who are called into active service with a sufficient number so that they may send a filled-out form letter to each of their patients, a carbon copy and list of the patients going to the doctor who has agreed to look after the physician's practice, and a second carbon copy and list to be sent to the secretary of the Hennepin County Medical Society.

The secretary of the Hennepin County Medical Society is instructed to file the carbon copy and list received by him, and on notification by a physician that he has terminated his service with the Government and has resumed his practice, the secretary of the Hennepin County Medical Society shall then send out to each of the patients of this physician whose names and addresses he has received in the filed list, a letter stating that the physician has resumed the practice of medicine, and requesting the patient, in the name of the Society, to recognize the physician's patriotism by summoning him should the patient be in need of medical attention.

Proposed Form-Letter

(On Letter-head of Hennepin County Medical Society)

"Dear Mr.....: As a member of the Reserve Corps of the United States Army I have been ordered into active service by the Government, and on that account I am writing to you of this fact, so that,

in case of illness, you may summon some other doctor to attend you. In my absence, Drs. have kindly consented to attend my patients, and I can heartily recommend them. If you should prefer any other member of Hennepin County Medical Society, he is obligated to render service under the same conditions.

Sincerely,

....."

Further Resolution:

Recognizing further the financial sacrifices that many members of the community will make in enlisting in the Government service during the war, and the suffering that will be thereby entailed, be it resolved:

First. That it is the sentiment of this Society that dependent members of the families of all those who have enlisted for war service be attended, when necessary, free of charge, or for such reduction in fees as may seem advisable.

Second. That for the purpose of administering such relief the city be divided into thirteen districts, conformable to the present ward lines, and that physicians be requested to volunteer their services to attend patients within their own district.

Third. That a sub-committee of the Committee on Medical Preparedness acting in conjunction with the American Red Cross, determine the amount of relief to extend in each individual case.

BOOK NOTICES

THE CARE OF GYNECOLOGIC PATIENTS. By E. E. Montgomery, A. M., M. D., LL. D., F. A. C. S. Philadelphia: W. B. Saunders Co., 1916, cloth, \$1.25 net.

This book describes in a succinct manner the various gynecological and abdominal operations, laying especial stress upon the preparation and care of the patient and upon the instruments necessary for the operation. The author has made a very interesting book, especially valuable as a manual for nurses and internes. The operator should find it useful because of its clear exposition of technic. The illustrations are well chosen.

—LA VAKE.

A TREATISE ON DISEASES OF THE SKIN. For the use of advanced students and practitioners. By Henry Stelwagon, M. D., Ph. D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Octavo of 1309 pages, with 356 text-illustrations and 33 full-page colored and half-tone plates. Philadelphia: W. B. Saunders Company, 1916. Cloth, \$6.50; half morocco, \$8.00.

Stelwagon's *Diseases of the Skin* has been a standard text-book on this subject for the past fourteen years. The present, or eighth, edition has been carefully revised, and contains a wealth of material and references relating to dermatology and syphilis.

Chapters on the exanthemata are written by Dr. W. M. Welch, and are, of course, authoritative.

The new chapter on occupational dermatoses is of importance, not only to dermatologists, but to the general practitioner.

The section on syphilis includes the modern treat-

ment of this condition with salvarsan and mercury. The author, however, still favors the internal administration of mercury, a method that has practically been abandoned in favor of intramuscular injections by most syphilologists.

—G. M. OLSON.

DISEASES OF THE DIGESTIVE TRACT AND THEIR TREATMENT. By A. Everett Austin, A. M., M. D., former Professor of Physiological Chemistry at Tufts College, University of Virginia and University of Texas; present Assistant Professor of Clinical Medicine, in charge of Dietetics and Gastro-intestinal Diseases, Tufts College; etc. With 85 illustrations, including 10 color plates. St. Louis: C. V. Mosby Company, 1916, pp. 552. Price, \$5.50.

The writer approaches his task of reviewing this book in a friendly spirit, as he and the author were fellow students in Berlin years ago.

Dr. Austin says in his preface that "the methods of investigation employed are those in daily use in the author's clinic; there are many others, undoubtedly equally as good, and perhaps even better, but from the multitude these have been chosen for their practical application and ease of accomplishment in a clinic where, of necessity, methods must differ from those of a research laboratory." Notwithstanding this modest disclaimer, it is a volume that must be read carefully to be appreciated, especially the keen analysis of clinical conditions, which betrays the author's German training. The chapters on the chemistry and microscopy devoted to the feces, which is a subject that has received a rather step-motherly treatment from many writers heretofore. It is regrettable that a discussion of Rehfuß's method of fractional estimation of gastric digestion was not within the scope of the book as outlined above.

Emphasis is laid on the part played by the nervous system, especially upon the necessity of bearing in mind the location of nerve ganglia in the abdomen which become painful to pressure under certain conditions and simulate appendicitis, cholecystitis, or gastric ulcer, which may be the subjects of unsuccessful surgery unless the simulation is recognized in time.

An important portion is devoted to the x-ray, although the author says that "an effort has been made to show that every successful diagnosis rests, like a stool, upon four legs,—history, physical examination, chemical analysis, and radiology,—without expressing any great confidence in either when taken alone."

The radiograms shown are well selected and illustrative. It is to be noted that no peristaltic activity is ascribed to the upper part of the stomach. There is good authority to support this view, but one who has had a chance to see many stomachs by means of the contrast meal, might be inclined to wonder if there are not a good many exceptions to this conclusion.

Treatment, both dietetic and medicinal, is given a prominent place, and is worthy of the rest of this excellent work. Directions for massage are also given, but no mention is made of abdominal-muscle exercises.

Like other men who have forged their way to the front, the author has his individual views about some things that tend to give an added interest to those familiar with the conventional treatment of these subjects.

It is, of course, impossible for one book to be en-

tirely adequate for a field so extensive as diseases of the digestive tract, but the writer is convinced that this book should be in the library of the progressive physician.

An occasional typographical error seems to have crept into the book. The author's direction for locating the pylorus is evidently the subject of inaccurate proof-reading, the word "left" having been used when "right" was intended.

—KNIGHT.

DISEASES OF THE EYE. By George E. De Schweinitz, M. D., LL. D., Professor of Ophthalmology in the University of Pennsylvania. Eighth edition, thoroughly revised and enlarged. Octavo of 754 pages, 386 text illustrations, and 7 lithographic plates. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, \$6.00 net; half morocco, \$7.50 net.

The new (eighth) edition of De Schweinitz' "Diseases of the Eye" fully maintains the high standard of the previous editions. Its distinguished author has rendered a real service to American ophthalmology in producing, in one volume of moderate size, a remarkably comprehensive text-book, admirably planned and lucidly written. Much new matter has been added, notably that in regard to anaphylactic keratitis, family cerebral degeneration with macular changes, ocular symptoms of diseases of the pituitary body,—descriptions of new methods of operative technic, etc.

Colonel Elliot has written the description of sclero-corneal trephining; Dr. W. M. Sweet, the chapter on x-ray localization of foreign bodies; and Dr. E. Jackson, the section on retinoscopy.

The book is excellently printed, but the illustrations still leave much to be desired. Many old cuts are kept in service that should have been "retired" long ago, and the second cut, illustrating the McReynolds operation, for pterygium, for instance, does not gain in clearness by being printed upside down.

—A. E. SMITH.

PRACTICAL MEDICINE SERIES, comprising ten volumes on the year's progress in medicine and surgery. Under the general editorial charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume X, Nervous and Mental Diseases. Edited by Hugh T. Patrick, M. D., Professor of Neurology in the Chicago Polyclinic, etc., and Peter Bassoe, M. D., assistant professor of nervous and mental diseases, Rush Medical College, with the collaboration of Lewis J. Pollock, M. D. Series 1916. Chicago: Year Book Publishers.

Volume 10 of the Practical Medicine Series, devoted to a brief and very well-digested résumé of the best and most striking contributions to current medical periodicals covering the field of nervous and mental diseases, like its predecessors is of signal value to the busy practitioner, whether he be specializing or not. Brevity is one of the greatest possible merits in all medical writing, too often forgotten by the enthusiastic author. It is possible, however, to be too brief, and some of the matter is condensed rather too far in this work.

One of the most timely reviews is on cerebrospinal meningitis, especially interesting in view of the epidemic now in progress. One article on the varied eruptions having diagnostic value is decidedly important. A chapter on brain tumors includes several clear plates of basal ventricular and deep lesions.

Summaries of interesting papers on spinal injuries of war origin by Gordon Holmes, Souques, and others contain very valuable material. There are also admirable condensations of articles on various functional nervous conditions and mental states. One on epilepsy by Dr. Dercum gives correct outline for diet limitation, but still holds to the archaic use of bromides as the chief resort medically. The sooner the medical profession discards this dogma the better for the epileptic. Extended attention is given to a report of two atypical cases of lenticular degeneration by Drs. Hamilton and H. W. Jones.

It is altogether a very handy and useful little volume.

—CRAFTS.

HANDBOOK OF SUGGESTIVE THERAPEUTICS, APPLIED HYPNOTISM, PSYCHIC SCIENCE. A manual of practical psychotherapy, designed especially for the practitioner of medicine, surgery and dentistry. By Henry S. Munro, M. D., Omaha, Neb. Fourth edition, revised and enlarged. St. Louis: C. V. Mosby Company. 1917. Price, \$5.

This is not only a well-presented and extensively elaborated presentation of suggestive therapy, but it includes, comprehensively, the much wider field of psychotherapy. It is a very readable work and has distinct literary merit, a quality too often lacking in medical writing.

The profession has given in the past too little attention to the psychical side of the patient's state of health, whether functional or organic, and has often failed in obtaining the best results because of this ignorance. Not only this, but, as pointed out graphically by the author in the chapter on abuse of personality, the physician, by his bearing and words, may be a positive menace to the patient and to his recovery. If physicians would give more intelligent study to the influence of the attitude of mind and feeling of the patient in all his work, there would be little room for the long line of fakirs who make use of these factors in their work.

Rather too much value is attached to complete hypnosis, which is rarely useful and is often harmful. Better results can ordinarily be accomplished without it.

The work has one important fault. Like too much writing in all fields of literature, it is too prolix, and the same fundamental principles are repeated over many times in the different chapters. The briefer the compass in which material can be put and include the essentials, the better in these busy days. Each chapter, however, is brief and well worth the time its reading may take.

—CRAFTS.

REPORTS OF SOCIETIES

THE BLUE EARTH VALLEY SOCIETY

The Society met at Fairmont on May 17, with twenty-five members present. The medical officer for soliciting medical volunteers was not present, as promised. Dr. G. W. Dewey read a paper on "Pernicious Anemia." Dr. J. A. Broberg read a paper on "Leukemia," and also reported two cases of acute lymphatic leukemia.

Dr. J. H. James, of Mankato, read a paper on "Acute Inflammation of the Middle Ear."

The following resolutions were adopted:

Resolved, That the members of the Blue Earth Valley Medical Society take care of the practice of other members who are absent on military duty; that fees derived from said practice be evenly divided with the family of the absent member; that upon his return from military duties all patients and the practice in general shall be turned over to him as far as practicable.

Be It Further Resolved, That it shall be unethical for any member to refuse to divide the fees secured from an absent member's practice, or to attempt to hold any part of such practice, after the return of the absent member from military service.

J. A. BROBERG, M. D.,
Secretary.

NEWS ITEMS

Dr. Bernard Sorose has moved from St. Paul to Winger.

Dr. C. R. Morss, of Zumbrota, has moved to Coleraine.

Dr. J. H. Cosgrove has moved from Belfield, N. D., to Duluth.

There have been 243 cases of infantile paralysis in Minnesota since Jan. 1, with 102 deaths.

Dr. G. S. Douglas, of Duluth, was married last month to Miss Belva Downs, of Superior, Wis.

Dr. L. W. Morsman, of Chicago, has joined his brother, Dr. C. F. Morsman, in practice in Hibbing.

Glasgow, Mont., hopes to have a new hospital. The Deaconess' Association of the state will raise \$30,000 for a building.

The American Red Cross awarded Minnesota a banner for selling the largest number of Red Cross seals per capita sold in the United States.

Dr. John T. Buckley, for many years head of the Northern Pacific Hospital at Missoula, Montana, died last month at the age of 64. Dr. Buckley was formerly a resident of Fargo, N. D.

Dr. E. P. Quain, of Bismarck, N. D., tendered the Government a Section of a Hospital Unit, consisting of six commissioned officers (medical men) and about twenty nurses. This Section may be assigned to any Base Hospital, at home or abroad.

Dr. Arthur J. Gillette, surgeon of the Minnesota Hospital for Crippled and Deformed Children, has been authorized by the State Board of Control to prepare for the treatment of soldiers deformed in the war. Temporary buildings will be utilized for hospital purposes.

Base Hospital Unit No. 26, commonly called the University of Minnesota Base Hospital Unit because its officers are University men, is practically complete, as are its equipment and guarantee fund. It has 26 commissioned officers, 153 enlisted men for hospital work, and about 100 nurses. It is liable to call any moment.

And somebody blundered! At a number of society meetings held within the past month the attendance was unusually large in expectation of hearing an army medical man present the needs of the Government, and frequently no such officer appeared. Dr. Corbett spoke before the Ramsey, the St. Louis, and the Hennepin County Societies.

Dr. S. R. Maxeiner has resigned as secretary-treasurer of the Hennepin County Society, expecting soon to go abroad in the army medical service. The Society preferred to grant Dr. Maxeiner leave of absence, but Dr. Maxeiner thought this course was not best for the Society, and his resignation was reluctantly accepted. Dr. R. T. La Vake was elected to fill the vacancy.

Mr. Paul J. Benjamin, secretary of the Anti-tuberculosis Committee of the Associated Charities of Minneapolis, Drs. Walter J. Marcle, F. W. Wittich, and Ernest Mariette, and Dr. H. M. Bracken, of the State Board of Health, attended the Tuberculosis Conference at Cincinnati last month. We shall give a report of the meeting in our next issue.

The Committee on Preparedness of the Hennepin County Medical Society, of which Dr. J. Warren Little is secretary, requests that physicians looking for locations or offices in Minneapolis notify the secretary, who will notify them of offices left vacant by those in the service. The Committee also desires to obtain the names of all Minneapolis medical men who enlist in the medical service.

The Governor of Minnesota has appointed the following physicians on State Boards: Board of Health, Dr. Egil Boeckman, St. Paul, and Dr. Christopher Graham, Rochester (both re-appointed), and Dr. C. L. Scofield, Benson; Tuberculosis Advisory Board, Dr. E. T. Sanderson, Minnesota; Board of Medical Examiners, Dr.

Ida A. MacKeen, Minneapolis, Dr. G. B. Weiser, New Ulm, and Dr. A. M. Eastman, Minneapolis.

Early in the month a request came from the Surgeon-General of the United States for six surgeons subject to immediate call. They were named by Dr. A. A. Law, head of the University Base Hospital Unit. They are the following: Dr. Gordon M. Clark, University Hospital; Dr. O. Kittleson, University Medical School; Dr. John F. Abbott, St. Paul; Dr. Stanley R. Maxeiner, Minneapolis; Dr. Herbert H. Thompson, Minneapolis; and Dr. Geo. E. Sutton, Mayo Staff, Rochester.

At the recent annual meeting of the North Dakota State Medical Association the following officers were elected: President, Dr. G. M. Williamson, Grand Forks; first vice-president, Dr. E. A. Pray, Valley City; second vice-president, Dr. W. P. Baldwin, Casselton; third vice-president, Dr. Fred Ewing, Kenmare; delegate to the A. M. A., Dr. Charles MacLachlan, New Rockford; alternate, Dr. J. P. Aylen, Fargo; treasurer, Dr. W. F. Sihler, Devil's Lake; secretary, Dr. H. J. Rowe, Casselton. The 1918 meeting will be held at Fargo.

The Minnesota Medical Examiners for the U. S. Medical Reserve Board, appointed by the Surgeon-General of the United States, are Dr. J. Frank Corbett, president, Minneapolis; Dr. H. M. Workman, Tracy; Dr. H. P. Ritchie, St. Paul; Dr. H. B. Zimmerman, St. Paul; and Dr. D. M. Berkman, Rochester. They have accepted over one hundred applicants after a somewhat rigid physical and professional examination. These applicants have come from several Northwestern states. Physicians over 22 and under 55 years of age are accepted for the Medical Reserve Board.

At practically all of the recent meetings of county and district medical societies in the Northwest announcement has been made, in the form of resolutions or otherwise, that physicians have

pledged themselves to meet all the needs of the Government for medical service. Some of the societies gave all of the time of their meetings to the subject, and most of the societies pledged their members who do not enlist to care for the patients of physicians who do enlist.

PHYSICIANS LICENSED AT THE APRIL (1917) EXAMINATION TO PRACTICE IN MINNESOTA

UPON EXAMINATION

Holmes, Alva E., Kentucky Sch. of Med., 1902
Lund, Simon O., Rush, 1916
Roberts, Lyle J., U. of Minnesota, 1916
Rowe, Paul H., Rush, 1916
Solhaug, Sam B., U. of Minnesota, 1917
Stavrou, Geo. P., U. of Athens, 1905
Tanner, Chester O., U. of Minnesota, 1917
Tompkins, Charles R., Rush, 1916

BY RECIPROCITY

Andersen, Clarence W., U. of Louisville, 1911
Botsford, Leola P., N. Y. Homeo. Med. Coll., 1910
Clark, Henry H., P. & S., Chicago, 1893
Doust, Horace T., Northwestern, 1915
Hess, Charles L. von, Northwestern, 1914
Kessler, Arthur G., Ill. Med. Coll., 1903
Koerber, Paul E., Omaha Med. Coll., 1896
Kohler, Dalphin W., Creighton, 1916
Larsen, Reuben L., Northwestern, 1916
McKillip, William J., Marquette, 1916
Meisenbach, Jacob E., U. of Nebraska, 1904
Moore, Alex. B., U. of Virginia, 1907
Morse, Morton, U. of Illinois, 1915
Murray, Edward J., U. of Colorado, 1914
Packard, Louis A., U. of Iowa, 1914
Schurmeier, Harry L., Northwestern, 1911
Soper, Fred C., U. of Iowa, 1905
Summers, Martin P., P. & S. University of Illinois, 1908
Twiss, Henry I., Boston U. Sch. of Med., 1903

MINNEAPOLIS OFFICE FOR RENT

Very desirable office in residential section of the city. Will sell office equipment reasonably. Address 501, care this office.

PRACTICE FOR SALE

An unopposed practice, established eight years in a good small town. Invoice and take part cash. Address F. L. Darland, Sawyer, N. D.

LOCUM TENENS WANTED

Experienced physician and surgeon is open to take the practice of physician going to the front for six months or more—in Twin Cities. Address 506, care of this office.

PARTNER OR ASSOCIATE WANTED

A physician in general work in one of the larger towns in South Dakota would like to have a partner or associate; expects to be away part of next winter. Address 497, care of this office.

POSITION OPEN

I want a locum tenens or I will sell my unopposed practice in southern Minnesota for the price of office equipment. Large territory and fine location. Address 492, care of this office.

PRACTICE FOR SALE

I wish to sell my practice in northern Minnesota in a town of 900 in a rich farming and dairying country. Will sell part or all of equipment, with real estate optional. Address 510, care of this office.

OFFICE POSITION WANTED

A young lady with no experience, but with a pleasing personality and the ability to take charge of an office containing a number of physicians, wishes a place in Minneapolis. Address 508, care of this office.

PRACTICE WANTED

As I finish my internship at the Minneapolis City Hospital on June 15, I desire to purchase a practice in a small town or to become an assistant or associate to a physician with a well established practice. Address 509, care of this office.

APPARATUS FOR SALE

Betz entire body (reclining kind) hot-air apparatus or electrical body apparatus. Address 499, care of this office.

FOR RENT—FULLY EQUIPPED OFFICE IN METROPOLITAN BANK BUILDING, MINNEAPOLIS

Two physicians will share their splendid suite of offices in the above-named building with a third physician—internalist preferred. Address 507, care of this office.

POSITION WANTED

An assistantship, partnership, or locum tenens work in Minnesota by an experienced physician who can give best of references. Internal medicine, obstetrics and pediatrics preferred. Address 494, care of this office.

OFFICE FOR RENT

I desire to sublet my suite of offices (tiled-floor operating-room, consultation-room, rest-room, dark-room, and reception-room) in the Masonic Temple, Minneapolis. Will sell the fixtures for offices at a fair price. Address 502, care of this office.

PRACTICE FOR SALE

A \$5,000 unopposed practice in small town in northern Minnesota on railroad; good roads. Nearest doctors east 10 miles, west 15 miles, south 25 miles, north, very far. Equipment, \$500. \$2,000 drug stock optional. Have commission in U. S. Corps subject to being called at any time. Reasonable terms. Address 505, care of this office.

ASSOCIATE PHYSICIAN IN HOSPITAL WORK WANTED

I want a young man to work with me in my well-established hospital in a good Minnesota town. One who can speak the Scandinavian languages or German preferred, but not indispensable. If he can do eye, ear, nose, and throat work with x-ray and cystoscopic work, or if he is good enough in general work partly to relieve me, I can do the special work named. I want a good man for a good place at once. Give a full account of yourself in your first letter. You will be satisfied with the work if you can do it. Address 503, care of this office.

PUBLISHER'S DEPARTMENT

THE VULCAN PORTABLE COIL

The Vulcan Coil is manufactured in California, and is sold in the Northwest by Messrs. Noyes Bros. & Cutler. This coil has many points of excellence, and the claims made for it are well worthy the attention of all users of instruments of this kind, especially as the reputation of the selling agents, Messrs. Noyes Bros. & Cutler, stands back of such claims.

The Company's catalogue, which can be obtained from the Company or their agents, shows many attractive models, and will interest all x-ray workers.

THE ABBOTT LABORATORIES

The Abbott Laboratories, of Chicago and New York, have had a very remarkable growth which has been based upon the merit of its product, now in large measure the staple of the medical profession, put upon the market in competition with the oldest laboratories in Europe and America, and always holding its own.

The Laboratories have recently put out a "Pituitary Solution (Abbott)," used extensively in delayed labor and as a heart stimulant. It is put up, as are all Abbott preparations, in elegant form and is sold at a very moderate price.

REST HOSPITAL, MINNEAPOLIS

Rest Hospital is a truly home hospital. It is located in a handsome residential district of Minneapolis, and is conducted by Miss Delia O'Connell, R. N., who has had many years of experience as a hospital superintendent under a well-known neurologist. It is, indeed, all that anyone can wish in a home hospital for nervous and other patients, but mental cases are not admitted.

It is patronized by our best physicians, as it meets their requirements for an institution making moderate charges, while meeting all the requirements of modern practice. No one need hesitate to send any suitable case to Rest Hospital.

MUDCURA SANITARIUM

Dr. H. P. Fischer has built up at Shakopee, Minn., near the Twin Cities, an ethical institution for the administration of sulphur mud baths that is worthy the entire confidence of the profession. There are few physicians who do not frequently have patients that will find very speedy relief under this treatment, and who seem to resist all forms of medication. Such patients may safely be sent to Dr. Fisher, with the assurance that they will not be imposed upon, and will be returned to their home physicians for such permanent care as they may need, and will be made grateful patients of the medical men advising this sulphur mud treatment.

POKEGAMA SANATORIUM

We sometimes, indeed often, wonder if the Northwestern profession is aware that a very high grade sanatorium for the tuberculous is conducted in Pine County, Minnesota. Its director, Dr. H. Longstreet Taylor, of St. Paul, is a writer of recognized ability, and its resident director, Dr. Robert Glenn Allison, was formerly with the famous Trudeau and other institu-

tions of like character, thus laying the best possible foundation for the work he is now doing at Pokegama.

Then, too, the location is very beautiful, and no recognized scientific treatment is overlooked.

There are few institutions for the care and treatment of the tuberculous that can be more highly recommended than the Pokegama Sanatorium; and, besides, its rates are very moderate.

THE RADIUM INSTITUTE OF CHICAGO

When radium ceased to perform miracles and failed to raise the dead, many men felt disposed to throw it upon the "fad heap," a medical term for the business man's "scrap heap."

It does not belong there, and the medical man who turns his back upon it may sacrifice the life of many a patient with an entirely curable disease.

The Radium Institute of Chicago is conducted by a Council of high-grade physicians who know what may be expected of radium and who make no absurd or unscientific claims for it. The wise physician will always heed such council, and will give his patient the chance for cure and for life that this scientific and wonderful therapeutic agent offers.

THE NATIONAL PATHOLOGICAL LABORATORY

Many physicians still look upon a public pathological laboratory as a local affair, a laboratory next door to the private laboratory. It is not necessarily anything of the kind, and the National Pathological Laboratory of Chicago has demonstrated this by doing a *national* business, and doing it to the entire satisfaction of its large clientele.

The Chicago institution, with a branch office in New York City, is doing all kinds of pathological work, and its prompt service puts the facilities of its home office at the disposal of every physician in the West.

A trial of this high-grade laboratory will convince anyone of its value to the profession.

BACTERIAL VACCINES THE THERAPEUTIC WEAPON IN THE DAILY COMBAT OF INFECTIONS

In the treatment of infections, the goal should be the permanent cure of the disease. This is therapeutically accomplished by creating in the patient ferments, which neutralize and destroy the bacterial ferments and germs responsible for the disease. A vast amount of clinical experience has abundantly proven that germ invasion is overcome by raising body resistance, with the timely use of bacterial vaccines.

The great advances in treating acute general infections with bacterial vaccines during the last few years are due to the fact that physicians are more consistent in their clinical judgment, which is due to the constantly increasing encouragement from the undeniable clinical results they have obtained with Sherman's bacterial vaccines at the bedside.

In dealing with diseased conditions it is essential that our measures conform as nearly as possible to nature's methods. The close association of certain infecting organisms with diseased conditions, would at least indicate that they constitute essential factors towards interfering with our well being and that stimulating cell activities to increased vitality, by the use of bacterial vaccines, is one of the important means of defense.

Vaccines which contain the most common infecting organisms serve this purpose best. A combined vaccine containing colon bacilli, streptococci, pneumococci and staphylococci is the one usually employed. Bacterial vaccines consist essentially of bacterial proteins and are given in such extremely small doses that no harmful results can follow their administration.

Sherman's standard suspension vaccines are therapeutic weapons, and when used in combating acute general and chronic infections, they give gratifying results. For full particulars write G. H. Sherman, M. D., Detroit, Mich.

TO REDUCE CATARRHAL INFLAMMATION

Acute catarrhal inflammation of the upper air-passages,—coryza, rhinitis, etc., popularly known as catarrh or "a cold,"—which is prevalent in all parts of the country in all seasons, and particularly at this time of the year, while never serious, renders the victim entirely uncomfortable, and is often quite painful. Usually this condition is an independent affection, but often it is the first sign of the development of another disease; in any event the severe manifestations call for some agent of relief.

The thin, irritating excretion makes the nostrils sore; there is inflammation of the mucous membrane of the septum with an engorgement of the lower turbinated bodies; the mucous membrane of the tear-duct is swollen; there are pains over the frontal sinuses and slight soreness of the throat and stiffness of the neck.

A poultice of hot Antiphlogistine over the nose and extending one inch on each side, applied before retir-

ing, relieves "the stuffed up" feeling in a very short time. The pain subsides and the patient, breathing in a normal manner, usually has a restful sleep, and morning finds a considerable improvement with all of the distressing symptoms abated.

ADVANTAGES OF GERMICIDAL SOAP

On solution in water Germicidal Soap (McClintock) liberates a small quantity of free alkali. This prevents the coagulation of albumin and permits the mercuric iodide contained in the soap to thoroughly penetrate bacterial and tissue cells.

Germicidal Soap is a valuable disinfectant in surgery, in gynecology, in obstetrics, and in routine practice. It is not only detergent, but it is a penetrating antiseptic at the same time. It is an excellent lubricant for sounds and catheters. It is always ready for use. No weighing or measuring is necessary. There is no waste. Hands, instruments and field of operation are quickly disinfected with the one material.

Germicidal Soap does not attack nicked or steel instruments, as does bichloride of mercury. It will not cause numbing of the hands as does carbolic acid.

Germicidal Soap is supplied in two strengths: Germicidal Soap, two per cent. mercuric iodide—large cakes, one in a carton; Germicidal Soap, Mild, one per cent. mercuric iodide—large cakes, one in a carton—small cakes, five in a carton; Germicidal Soap, Soft, one per cent., in collapsible tubes; and Germicidal Soap Surgical, one per cent., in cylindrical cakes wrapped in perforated paper and enclosed in a nickel-plated case. It is well to specify "P. D. & Co." in ordering.



A Real "Rest" Vacation

DOCTOR, some of your patients will be needing a vacation soon—a change of scene, restful diversion and a taste of the outdoor life.

Such patients are cordially invited to Battle Creek where everything is scientifically planned for rest, recreation and health-building—where the patient eats, sleeps and lives in a wholesome and "biologic" way.

The bill of fare at Battle Creek is simple, delicious and appetizing. A corps of twenty trained dietitians are always at hand in the dining halls to assist the patient in selecting foods best adapted to his individual needs.

Ample facilities for the outdoor life encourage health-building diversions. Graduated exercises meet the particular needs of the more feeble patients.

If needed, a complete physical examination and treatment are available through the most scientific equipment. Forty specializing physicians, three hundred highly efficient nurses, nearly a hundred trained bath attendants and an able corps of physical directors are at the service of vacationists.

Literature descriptive of the vacation advantages of Battle Creek will be sent free upon request to any physician.

THE BATTLE CREEK SANITARIUM,

Box 350,

Battle Creek, Michigan

THE JOURNAL-~~L~~ANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, JUNE 15, 1917

No. 12

TRANSACTIONS OF THE NORTH DAKOTA STATE MEDICAL ASSOCIATION—THIRTIETH ANNUAL MEETING, 1917

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CHARLES MacLACHLAN, M. D.....New Rockford

COUNCILOR—TRAIL-STEELE COUNTY SOCIETY

JAMES GRASSICK, M. D.....Grand Forks

MEMBER OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

CHARLES MacLACHLAN, M. D.....New Rockford

Alternate

J. P. AYLEN, M. D..... Fargo

Proceedings of the House of Delegates

FIRST SESSION—TUESDAY, MAY 8TH

The House of Delegates met at 8 p. m. on May 8, 1917, in the Commercial Club Rooms, New Rockford. There were present, in addition to the President and Secretary, Councilors Robt. D. Campbell, Chas. MacLachlan, Jas. Grassick; Delegates W. C. Nichols, J. P. Widmeyer, H. G. Woutat, W. A. Gerrish, I. D. Clark, and Martin Kranz.

The President appointed Drs. Clark, Gerish, and Kranz a committee on credentials. They made their report, and the Delegates present were seated.

The minutes of the last annual meeting were read and approved as printed in THE JOURNAL-~~L~~ANCET.

The Secretary submitted his annual report as follows:

SECRETARY'S REPORT

The past year has presented nothing of a startling character in the profession, except the medical preparation incident to the expected now real conflict of arms. The alacrity displayed by the members of our medical association in volunteering their services in such capacity as would be required is certainly commendable, and speaks well for the loyalty of the profession in this commonwealth. In case of actual enlistment and the requirement of those who have signified their intention to enter some branch of the military service, has brought up a question that is being liberally discussed in medical journals. The question is that, in case the country requires the services of such physicians as have qualified to enter military duty, what provision will be made to assist their families during their absence? The Medical Department of the Army

in calling the reserve officers to the colors wishes to cause as little hardship and sacrifice to the reserve medical officers as may be consistent with the needs of the country. With that end in view, the Department desires that we bring to the attention of the profession at large the necessity of city, county, and state medical societies, organizing for the purpose of taking care of the practice of the officers of the Reserve who respond to a call of service. The desire of the organization is that the local medical society, through its members, will take care of a physician's practice during his absence. When relieved from active duty his practice would be returned to him intact. Such a plan will cause no unnecessary hardship upon the officer responding to a call for service, while the absence of such a plan would penalize the officer who gives his service to the country in a crisis. The Hennepin County Medical Society of Minnesota is a self-appointed recruiting office for medical men who expect to enlist for service. The Society proposes also to see that the deserving families of recruits are provided with free medical care, and a resolution has been passed whereby the practice of the enlisted medical man will be taken care of, and a proper proportion of the fees collected, probably $33\frac{1}{3}$ per cent, will be paid over to the physician's family by the attending physician, and all such patients will be returned to the medical recruit on his return from service.

MEMBERSHIP

Whether the anticipated war and the likelihood of enlistment by the medical fraternity has stimulated the physicians to become affiliated with local state associations is not easy to determine. Suffice it to say that the increase in members is certainly very gratifying. Last year we reported 358 active members, an increase of 37 over the previous year; today we have enrolled 385 with not a few of the former members on the delinquent roll, many of whom will be paid up before the close of the year. There is no good reason why any general practitioner should be outside the breastworks, and there are very many good reasons why he should be an actual member of the component society in his district.

MEDICAL DEFENSE

From the applications received from such of our doctors as have been treated to malpractice suits, it appears that the path of surgical treatment of fractures is not strewn with roses, and that thistles are not an uncommon weed along their way.

The Association has not been called on to pay out any fees for defending any of the suits since our last annual meeting. What cases are in progress and what settlements, if any, were made during the year, will be reported by the Committee on Medical Defense, and the counsel of the State Association.

ANNUAL REPORTS

All the component societies have reported, and in some cases the reports were most gratifying because of increased membership. It is to be regretted that promptness in not a few instances has not characterized the local secretaries, and their reports have strung along away beyond the limit extended to them to send them to the office of the State Secretary. Fortunately, the changes in the clerical force of the component so-

cieties have been few, and the additions to secretarial class have been active and willing learners, and, if retained, as every good secretary should be, the working unit will be greatly strengthened for securing new members and making early reports.

PUBLIC HEALTH

Our state is among those in the United States that is far in the background when it comes to vital statistics of births and causes of death among our people. We are not in the registration area because, forsooth, our people have not awakened to the necessity of taking advanced grounds in this most important question: and, until we can get our people to understand that there is as great a necessity for looking after the citizens of our state as there is for the caring for the dumb brutes, we can't expect to remedy this evil.

No legislation on the part of the profession was attempted during the last legislative session, because it was thought inadvisable to attempt to teach legislators before their constituents had awakened to the necessity for activity in this sphere.

THE JOURNAL-LANCET

The subscriptions to THE JOURNAL-LANCET have varied from 302 in January, 1916, to 372 in December, for which we have paid the publishers to January, 1917, \$361.94.

All papers read at our annual meeting and left with the Secretary or furnished the publishers, have been printed. The publishers have also kindly inserted as much of our program as was furnished in time by the Scientific Committee.

Fraternally submitted,

H. J. ROWE, M. D.,
Secretary.

Drs. W. C. Nichols, Jas. Grassick and H. G. Woutat were appointed a committee on officers' reports. The Chairman of Councilors, Dr. F. R. Smyth, made the following report:

REPORT OF THE COUNCILORS

In reply to a circular letter addressed to the secretaries of the different component societies of the Association, I have received the following reports:

Dr. Thomas J. Strong, Williston, reports that Kotana Society has eight members in good standing. During the year they had five regular meetings with interesting papers and clinical reports. Many physicians in the district do not belong to the Society on account of distance from meeting-place.

Dr. J. F. Hanna, Fargo, reports Cass County Society has thirty-six members, and has held three meetings.

A full-time health officer has been recommended but no action taken on account of the war.

The majority of the members have made application for appointment in the medical reserve corps.

Dr. Benj. L. Meigs reports that the Southern District Society has fifteen members in good standing, and they have held four well-attended and interesting meetings.

Fifty per cent of the members have volunteered for active service if needed.

Dr. Syver Vinje, of the Traill-Steele Society, reports eleven members and three regular meetings.

On account of bad weather they could not hold a

meeting to organize an auxiliary defense committee. One member has volunteered for active service.

Dr. G. Golseth, of the Stutsman County Society, reports a membership of seventeen, and more interest than usual taken in meetings.

Dr. G. F. Drew, of the Devils Lake District Society, says they have thirty-one members in good standing, and have held meetings every three months, which have been well attended.

A committee on auxiliary medical defense has been appointed, and several applications for army appointments have been received.

Dr. H. J. Friesen, of the Grand Forks District Society, reports fifty-six members with regular monthly meetings.

Dr. T. O'Brien, of the Richland County Society, reports sixteen members, but little interest taken in meetings.

An auxiliary medical defense committee has been appointed.

Dr. W. H. Bodensab, of the Sixth District Society, reports forty-three members in good standing, and that nine new members were admitted during the year.

Regular meetings have been held with good attendance and interesting papers.

An auxiliary defense committee has been appointed, and at the last meeting fifteen members agreed to offer their services for active field-work. In addition three members already hold commissions in the medical reserve corps.

A resolution was passed that members staying at home should look after the patients of members absent on duty and that 30 per cent of the fees collected from such patients should be paid to the absent physicians or their families. Respectfully submitted,

F. R. SMITH, M. D.,
Chairman of Councilors

The Treasurer read the following report:

TREASURER'S REPORT

Annual report for the year, from May 10, 1916, to May 10, 1917:

Date	Society	<i>Receipts</i>		No.	Receipt	Amt.
5-15-16	Sheyenne Valley	133	\$	5.00		
5-15-16	Traill-Steele	134		5.00		
5-23-16	Grand Forks District	135		5.00		
5-27-16	Sixth District	136		10.00		
5-27-16	Cass County	137		5.00		
6-22-16	Traill-Steele	138		5.00		
6-22-16	Cass County	139		5.00		
6-22-16	Cass County	140		10.00		
9-9-16	Devils Lake	141		2.50		
10-6-16	Tri-County	142		12.50		
10-17-16	Devils Lake District	143		1.25		
10-19-16	Tri-County	144		5.00		
12-10-16	Southern District	145		5.00		
3-5-17	Sheyenne Valley	146		110.00		
3-5-17	Southern District	147		60.00		
3-5-17	Cass County	148		130.00		
3-5-17	Devils Lake District	149		130.00		
3-5-17	Stark County	150		5.00		
3-5-17	Traill-Steele	151		50.00		
3-5-17	Southwestern	152		60.00		
3-5-17	Stutsman County	153		85.00		

Date	Society	<i>Receipts</i>		No.	Receipt	Amt.
3-5-17	Tri-County	154		70.00		
3-5-17	Richland County	155		75.00		
3-17-17	Tri-County	156		15.00		
3-19-17	Cass County	157		20.00		
3-20-17	Kotana	158		40.00		
3-20-17	Stark County	159		5.00		
3-20-17	Cass County	160		5.00		
3-27-17	Devils Lake District	161		10.00		
3-27-17	Tri-County	162		10.00		
3-27-17	Sheyenne Valley	163		10.00		
3-28-17	Sixth District	164		195.00		
4-6-17	Tri-County	165		5.00		
4-6-17	Grand Forks District	166		270.00		
4-20-17	Devils Lake District	167		5.00		
4-20-17	Richland	168		5.00		
4-20-17	Tri-County	169		5.00		
4-28-17	Northwestern District	170		390.00		
4-28-17	Cass County	171		20.00		
4-28-17	Grand Forks District	172		10.00		
5-3-17	Devils Lake District	173		3.75		
5-8-17	Stark County	174		80.00		

Total Receipts\$1,955.00

Disbursements

May 10, 1916, to May 10, 1917:

Date	Name	Amt.
5-16-16	Dr. G. F. Drew	\$ 75.00
5-26-16	JOURNAL-LANCET	176.18
8-19-16	Ella G. Bryan	73.87
9-9-16	Dr. H. J. Rowe	100.00
10-6-16	Saving Fund	500.00
10-20-16	Potter & Potter	5.75
11-22-16	Dr. H. J. Rowe	100.00
12-16-16	Bosard & Twiford	300.00
12-18-16	JOURNAL-LANCET	185.76
5-5-16	Casselton Reporter	24.25
5-5-16	Dr. H. J. Rowe	230.50

Total Expenditure.....\$1,771.31

May 10, 1916—Balance on hand....	\$1,620.00	
Cash receipts for year, May 10, 1916, to May 10, 1917.....	1,955.00	
Expenses for year		\$1,271.31
Deposited in Savings Account		500.00
Balance on hand		1,863.69
Total	\$3,575.00	\$3,575.00

Savings Account

June 30, 1916—Balance in bank....	\$ 675.15	
Oct. 6, 1916—Deposit	500.00	
Jan. 1, 1917—Interest	18.28	
Balance in bank	\$1,193.43	\$1,193.43

Total amount of cash in bank, both funds,\$2,997.12

Respectfully submitted,

W. F. SIHLER, M. D.,
Treasurer.

The report was referred, with that of the Secretary, to the Auditing Committee, composed of the Councilors.

The Committee on Public Health reported as follows, which report was approved as read:

REPORT OF THE COMMITTEE ON PUBLIC HEALTH
To the House of Delegates:

Your committee wishes to report that the health conditions of the state may be said to be normal, there being no serious epidemic of diseases, neither have there been any marked efforts toward improving conditions. The most important change has probably taken place in the Public Health Laboratory, where Dr. Bristol, the former Director, resigned, and his place was filled by Dr. John Cox.

The Laboratory's field of usefulness has been enlarged. A new Branch Laboratory was established at Fargo, and the Branch Laboratories at Minot and Bismarck have been brought to the point where their efficiency is much increased. The Director of the Laboratory has also done considerable field-work. In a number of cases where epidemics threatened he has gone to the locality and cleaned things up in an effective manner. This is really work which should be done by the State Board of Health, and no doubt would be done by them if they had sufficient funds. There could be much improvement in the work of the State Board of Health if they had funds which would permit them to do work of this order. It would permit them to have an organization which could take care of this class of work; especially where epidemics threatened a man could be sent immediately and render much valuable service. The State Tuberculosis Association does work which probably belongs to the State Board of Health, but the same reason holds as in the case of the State Public Health Laboratory.

The only legislation which has been enacted affecting Public Health is a bill by Senator Stenmo, which provides for medical inspection of pupils in the public schools. According to this bill at the request of two-thirds of the school directors of the county the County Commissioners here are authorized to secure a licensed nurse or a licensed physician to examine the pupils in the public schools, at least once a year, in the same manner the residents of the school district may petition the directors for a nurse or a physician to examine the pupils in the district.

The Committee feels that this is good legislation and that the physicians throughout the state should urge and encourage the examination of school children at least by a competent nurse, as many pupils are found to need medical attention who would otherwise be neglected if the matter were not brought to their attention in this manner. It also has a marked influence in preventing the spread of communicable diseases.

Respectfully submitted,

H. G. WOUTAT, M. D.

The Committee on Tuberculosis made the following report, which was approved:

REPORT OF THE COMMITTEE ON TUBERCULOSIS
To the House of Delegates of the North Dakota Medical Association:

Your Committee on Tuberculosis of last year quoted from the report of Dr. Carrol Fox, Surgeon of the United States Public Health Service, after his exam-

ination of the health conditions in North Dakota, as follows: "There is in the state an Anti-Tuberculosis Association. Its activities are legitimately those of a State health department and it is of such great importance to the community that the State should recognize its obligation to its citizens, take over their activities and place them in a well-organized health department capable of making the necessary investigations and exercising the proper advisory and supervisory control over the disease."

In conformity with the above recommendations, two bills were introduced in the last Legislature, one calling for a re-organization of our State Board of Health, and the other for the appointment of a Commissioner to investigate public-health conditions in the state and to report their findings two years hence. We regret that both of these meritorious measures, from a public-health standpoint, failed to receive sufficient support to assure their passage. The Legislature, however, "recognized its obligations" to the North Dakota Anti-Tuberculosis Association to the extent of granting it an increased appropriation for the furtherance of the educational work now being carried on.

The events of the past few months have done much to rivet our attention on an arm of our Government that has not been in the glare of the limelight, but has been doing its work without the flourish of trumpets. I refer to the American Red Cross. In 1905 it was recognized by the United States Government as an instrument to afford relief to the people in time of war, civic disaster, or emergency in their homes—in a word, to save life, relieve suffering, and promote human efficiency. Since its organization it has expended over \$1,000,000 annually in its work of relief. In this state we are familiar with it through the operations of the Red Cross Christmas Seals, which have been sold in the state since 1909. The North Dakota Anti-Tuberculosis Association is its accredited representative, and as such has carried on a campaign of public-health education, with special emphasis on the cause, prevention, and cure of tuberculosis. It is, we believe, the only organization in the state that is carrying on a systematic public propaganda along the lines indicated. In these days of great national stress, when efficiency in the individual means so much for country and for humanity, when every life saved from premature decadence means an added asset to our economic forces, when every person imbued with principles of right living means a recruit in the fight, when every case of disease prevented, every epidemic checked, every life prolonged, means an added unit to the sum total of preparedness in its broadest sense, we can in a way realize what the possibilities of such a movement really are. During the past year representatives of the Association have entered nearly every county of the state and, by exhibition, lecture, and demonstration, have helped in spreading the gospel of good health among the people.

A press bureau has been maintained, and *The Pennant*, our official organ, has a monthly circulation of 4,000 copies. In addition to these agencies about twenty-five thousand pieces of good health literature have been given away. The Sakakawea Bookmark, a little souvenir of good cheer, was so popular that it was difficult to supply the demand.

The Red Cross open-air school at the Sanatorium supported by the Association still continues to prosper and bear fruit. During the coming year we are planning to place several visiting nurses in the field, and thus give the communities that contributed most liberally to the Red Cross Seal sale something tangible in return. It is impossible to tabulate concrete results of such activities, but, in general terms, it may be stated they are having a decidedly beneficent effect on the thought and lives of our people.

From the wine-press of adversity have always come the best products of human thought, human endeavor, and human progress: so, when this fiercest struggle of the ages is finished, with nations depleted of their bravest and best, and when peace comes, as "come it will for a' that," there will, in our opinion, be ushered in such a movement for the conservation of our life forces as will astonish the world. In the readjustment of our economic conditions it will be well with the community that has its lamps trimmed and burning. The North Dakota Anti-Tuberculosis Association, having the moral and financial support of a united people, "will do its bit" for the conservation of life for democracy and for humanity.

All of which is respectfully submitted,

J. GRASSICK, M. D.,

Chairman, Committee on Tuberculosis.

The Committee on Necrology reported as follows:

REPORT OF THE COMMITTEE ON NECROLOGY

Your committee has to report that since the last meeting of the Association three members of our profession have passed to the blessed rest which comes to all.

ELIZABETH A. NEFF

Dr. Elizabeth A. Neff, of Emerson, graduated from the College of Medicine and Surgery, Chicago, in 1896, and was licensed to practice in North Dakota in 1911.

Dr. Neff was one of our early physicians, and had her full share of the trials and tribulations of a pioneer practitioner.

JAMES LYND SAVAGE

Dr. James Lynd Savage, of Fargo, graduated from the Milwaukee Medical College in 1897, and was licensed to practice in this state in 1898.

Dr. Savage was a prominent physician of his city, and at different times held important professional appointments, the duties of which he faithfully performed.

HERBERT J. JAMES

Dr. Herbert J. James graduated at Queen's University, Kingston, Ontario, Canada, and was licensed to practice in 1894.

He was well and favorably known in the northern part of the state, where he had been located since coming to the state. He took an active part in the meetings and proceedings of the State Association.

Your committee voices the feeling of the Association in tendering the sympathy of the members to the bereaved relatives. Respectfully submitted,

F. N. SMYTH, M. D.

J. GRASSICK, M. D.

The report of Delegate to the American Medical Association was submitted by Dr. Chas. MacLachlan, as follows:

REPORT OF DELEGATE TO THE AMERICAN

MEDICAL ASSOCIATION

To the House of Delegates of the North Dakota Medical Association:

Herewith is respectfully submitted the report of your Delegate to the 67th Annual Meeting of the American Medical Association, held June 12 to June 16, inclusive, 1916, at Detroit, Michigan.

The opening meeting of the Association was held at the Lyceum Theater on June 13th at 10:30 A. M. Hon. W. N. Ferris, Governor of Michigan, welcomed the Association in behalf of the State. In the absence of the Mayor, Mr. Allen Frazier acted similarly for the city. Dr. A. W. Hornbogen, President of the Michigan State Medical Association, did the honors in behalf of the local profession.

President-elect, Surgeon General Rupert Blue, of the United States Public Health Service, was introduced, installed as President, and delivered an address in response, the building being crowded from parquet to gallery. From twelve to thirteen thousand physicians were present at the sessions, registering from Canada, Europe, Central America, the West Indies, and our insular possessions. The attendance ranked second only, in numbers, to the 1908 meeting in Chicago.

Meetings of the various Sections of the Association were held in theaters, churches, hotel parlors, etc., throughout the central portion of the city. The post-office for visitors was in the spacious Armory building near the water front, where also were the scientific and commercial exhibits, and offices for registration of visitors.

HOUSE OF DELEGATES—SESSIONS JUNE 12TH TO 16TH

INCLUSIVE

Sessions were held in the Auditorium of the Wayne County Medical Society building, which is the property of the Society, a building with commodious quarters, comfortably furnished, at 33 High Street. The House consists of 132 delegates, representing 53 states and territories, of which 43 were represented with a full quota of members present—122 in all. The ten unrepresented were Delaware, Hawaii, Idaho, Isthmian Canal Zone, Philippine Islands, Porto Rico, South Dakota, Utah, Vermont, and Wyoming, each having but one delegate. To this has since been added Hayti.

Your delegate was present at every session of the House, and thereby missed all papers and discussions on scientific subjects.

The meetings were presided over by the President, Dr. Albert Vander Veer, of Albany, N. Y., and in his opening address the subjects principally dealt with were "medical laws," "medical inspection of schools," "industrial diseases," "the Trudeau School of Tuberculosis at Saranac Lake, N. Y.," and "medical military preparedness."

To give a verbatim report, or even an outline, of the reports of the several standing committees would be tedious and uncalled for, and your representative will therefore confine his statements to a brief résumé of

the transactions of the Conference Committee, to whom these reports were submitted, and which were finally adopted.

First—The Committee on Legislation and Political Action was instructed to bring before the House at the 1917 meeting a resolution endorsing pending legislation giving greater scope to the United States Public Health Service.

Second—The Committee on Hygiene and Public Health was instructed to memorialize the Secretary of the Treasury, asking that the United States Public Health Service be authorized to prepare and distribute for use an assay of certain drugs and their standards as recommended in the Ninth U. S. P.

Third—The Committee on Amendments to the Constitution and By-Laws, among minor changes, recommended that Chapter VIII, Section 6, be amended by adding the words, "No person can become an Associate Fellow who can be a member of the A. M. A. in the regular way."

Fourth—Report of Committee on Transportation and Place of Session received invitations from Atlantic City, N. J.; Chicago, Ill.; Columbus, Ohio; and New York City. A lively discussion arose over this report, but the delegation from New York plead so earnestly and eloquently for the opportunity to redeem their city from past errors in courtesy toward the A. M. A. that the ballot declared the 1917 session to be held in New York City.

The results of election of officers Thursday afternoon, June 15, 1916, at which 128 of the 132 members were present, are appended.

Features of the Detroit Meeting:

First—The uniform kindness and courtesy shown the visitors as instanced by the array of "Boy Scouts" in uniform, everywhere in evidence, to attend to the wants of visitors, run errands, dispatch telegrams, offer information, and all under their code of refusal to accept fee for courtesies extended.

Second—The Members of Wayne County Society constituted themselves a Reception Committee, whose automobiles with large "stickers" on the windshields, and badged chauffeurs, with the hailing sign, "Get in and ride," were at the Armory, Registration Bureau, at the buildings where all sessions were held, and at all of the principal hotels throughout the city.

Third—The Daily Bulletin of the A. M. A., published during the entire session, was placed in the hands of the visitor upon registering, giving all the necessary information, including the home addresses of those registering at the meeting, with local address during the session, announcements of local entertainments, and alumni meetings and dinners, and any information of interest to visitors.

Fourth—Books of information giving maps of streets of the city showing public building, large industrial plants, churches, and places of interest to visitors, together with all necessary particulars, tabulated, as to the headquarters of the Association; of the House of Delegates; of the different Scientific sections, and their places and hours of meeting, were freely distributed to visitors. Coupon booklets giving daily notices of special entertainments, where held, dinners of sections, College reunions, hotels and where to find them, with schedules of prices, railway, telegraph, automobile, and

garage information, with suggestions as to auto, trolley-line, and boat cruises, street traffic regulations, all properly indexed. All these requisites for the visitor concisely tabulated and indexed made his sojourn pleasant and profitable.

Fifth.—Lawn parties and receptions at hospitals, picnic, Closing Day to Ann Arbor by special train particularly for the Alumni of the State University, but open to all.

Sixth.—The scientific exhibits were varied and comprehensive, and the exhibitors were awarded as published. Lantern-slide daily exhibits on scientific subjects. Commercial exhibits also at the Armory comprised 115 groups of drugs, surgical instruments, and surgical and electrical appliances.

Seventh.—Addresses on Public Health by distinguished sanitary experts.

Eighth.—Open-house reception at the Wayne Co. Medical Building to all delegates on the evening of Monday, the 13th.

Ninth.—President Blue's reception at Hotel Statler ball-room on the evening of the 14th.

Tenth.—A meeting of the presidents and secretaries of constituent medical associations at the auditorium of the Wayne County Medical Society Building on the evening of June 15th.

Some features occurring during the session which are of historic interest:

Amongst the whirl of activities attendant upon an annual session of such a large national organization as the A. M. A., a few of more than passing interest from a scientific standpoint, in view of recent national happenings, may be noted. Chief among these may be mentioned the meeting at the Woodward Ave. Baptist Church on Wednesday afternoon, under the Orthopedic Section, when following the paper by Dr. Robert B. Osgood, of Boston, on "Orthopedic Surgery in War Time," advocating the establishment of American base hospital units in central and strategic locations and the voluntary enlistment of orthopedic surgeons in a government reserve medical corps, an unusual outburst of patriotic applause followed its rendition, and contrasted with the otherwise staid proceedings of the meeting.

Out of papers containing such sentiments as these was promulgated, for the first time in the history of the A. M. A., a mass meeting of the citizens headed by the profession, having for its object "Medical Preparedness" to protect the people of the United States in time of war. The meeting was held in the Lyceum Theater at 2:00 p. m. following the general session, the Michigan State and Detroit City Boards of Health co-operating. A monster health parade on the streets preceded the opening. Surgeon General Rupert Blue, retiring president; Dr. Chas. H. Mayo, the president-elect; Dr. C. E. A. Winslow, professor of Health, Yale Medical School, and Dr. Wickliffe Ross, director of the Rockefeller International Health Commission, were the principal speakers, and directed the organization of the National Medical Preparedness Association.

There can be little doubt today that the spirit which at that time pervaded the minds of the members of the profession so congregating, basically formed and gave impetus to the movement which has placed the profession as a class far in advance of any other profes-

sion in responding to the Government's request for volunteer service in the war, as was instanced in the immediate voluntary offer of one thousand qualified medical men for the allied European war front, and which has since been multiplied manifold.

Again during the session another remarkable advance in electrophysics made possible a potent factor in offensive and defensive warfare. There was a ten-thousand mile telephone circuit, including Boston, New York, Philadelphia, Washington, in the East; Atlanta, Birmingham, and New Orleans in the South; Seattle, Portland, San Francisco, and Los Angeles on the West, and as far north as Duluth, including twenty-four large cities within the boundary above described, over which exercises in Symphony Hall, Boston, on Wednesday, June 14th, were distinctly heard by guests in Detroit and in all the area above mentioned. The addresses, cheers, and even a phonographic rendition of the Star Spangled Banner in Washington, D. C., were heard and applauded throughout the entire country.

CHARLES MACLACHLAN, M. D.,
Delegate.

The House of Delegates adjourned until 7:30 P. M., Wednesday, May 9th.

SECOND SESSION—WEDNESDAY, 7:30 P. M.

The House of Delegates convened, and was called to order by the President, Dr. V. J. LaRose.

There were present Drs. Nichols, Widmeyer, French, Woutat, MacManus, A. J. McCannel, Wiig, Kranz, Meigs, Whittemore, Stickney, Gerish, Savre, Campbell, Baldwin, Smyth, Golseth, Greene, MacLachlan, and Grassick. The minutes of the former meeting were read and approved.

The Committee on Medical Defense submitted the following report for the year:

ATTORNEY'S LETTER TO THE COMMITTEE ON MEDICAL DEFENSE

North Dakota State Medical Association:

I beg leave to report that at the present time there are pending lawsuits in which the Association is defending as follows:

Philip Ott vs. Dr. Maercklin, pending at Dickinson and not yet tried.

Clarence Young vs. Dr. W. B. Scott, of Ray, pending at Williston and not yet tried.

Carl Peterson vs. Dr. John F. Christie, pending at Minot and not yet tried.

The case of Thorsen vs. Dr. Brenckle was adjusted, and disposed of according to our information, by the Thorsen estate giving its note to pay Dr. Brenckle's bill and waiving the counter-claim for malpractice.

The case of Beardsley vs. Drs. Ewing and Ewing, at Kenmare, which was pending in Ward County, in which Dr. Fred Ewing was a member of the Association. Both the doctors had insurance and the insurance companies defended. The case was tried on the 2d and 3d of March, 1917, and the jury returned a verdict of \$7,933.50 in favor of Beardsley against the doctors. There is a motion for a new trial pending

and instructions to take an appeal if the same is denied. This case was defended by two insurance companies, each having policies on the doctors.

We are also notified that Dr. Wm. P. Thelen, of Wilton, has been sued, and that he is a member of the Association, but he informs me that he carries a policy in the Fidelity & Casualty Co. of New York for \$15,000, and has sent the papers to the insurance company. I have advised him that under these circumstances the Association does not defend, but that we will render any assistance necessary or proper, and have asked him for a complete history of the case.

The case against Dr. John F. Christie, of Burlington, will probably be settled in some manner, as Dr. Christie has expressed his willingness to have the plaintiff put in the hospital and have his leg operated on with the purpose of having a good union result. The plaintiff's condition is such now that the fracture can be properly treated, whereas at the time Dr. Christie was treating it he was in such shape from the results of an explosion in the mine that the usual treatment could not be given.

In the case of Drs. Clark and Clark of Harvey, a judgment was recovered against Dr. Wm. Clark, who was not a member of the Association, but was defended by an insurance company. This was appealed, and subsequently affirmed by the Supreme Court. In the meantime Dr. Wm. Clark moved to South Dakota, and we are informed that he has advised the insurance company not to pay the same until such time as they receive further orders from him, and the judgment recovered is therefore not proving very profitable or remunerative to the attorneys who obtained the same. We presume that Dr. Clark is in such shape that collection could not be enforced from him, and feeling that the judgment was unjust, has determined not to pay the same.

There are no further matters that have been called to our attention within the last year.

Very respectfully submitted,

ROBERT H. BOSARD, Attorney.

The following report was made by the Committee on First Aid:

REPORT OF THE COMMITTEE ON FIRST AID

Your Committee on First Aid was unable to get together before the date of the state meeting, owing to the fact that the members of said Committee were scattered all over the state. However, we submitted the questions raised by Dr. Joseph Bloodgood, of the National First Aid Committee, to the Society as a whole for the purpose of obtaining a general discussion of the points involved. In the first place it was the consensus of opinion that there was no objection to the placing of iodine in the hands of laymen as a "first aid dressing." Iodine was also considered to be the best agent for field sterilization of wounds.

It was also the opinion of the different speakers that plaster-of-Paris splints protected by parafine or rubber tissue in the cases of compound fractures was the most suitable support for transportation of these cases. The wire-fixation splint was also suggested. A report of the discussions was duly forwarded to Dr. Bloodgood.

JAS. P. AYLEM, M. D.,

Chairman.

The local Committee on Arrangements for the comfort of the physicians during their stay made an oral report as to what they had done, and hoped it would meet the approval of those present. The report was approved, and the fidelity of the committee commended.

A report made by the Committee in reference to what legislation pertaining to public health had been enacted during the last session of the Legislature was laid over for a year.

The Auditing Committee reported that they had examined the accounts and vouchers of the treasurer and compared them with those of the secretary and found them correct. The report was signed by Drs. F. R. Smyth, R. D. Campbell, and J. Grassick.

The Committee on Officers' Reports submitted the following, which was approved:

REPORT OF THE COMMITTEE ON OFFICERS' REPORTS To the House of Delegates:

Your Committee on Officers' Reports beg leave to report as follows: We congratulate the Association on the excellent showing of the Treasurer and the Secretary.

We endorse the recommendations made by the President in his address advising the appointment of a committee to study health insurance, and the suggestion made as to methods of increasing membership in the local societies.

All of which is respectfully submitted.

W. E. NICHOLS, M. D.
J. GRASSICK, M. D.
W. G. WOUTAT, M. D.

Invitations were received from the Commercial Club of Fargo, the Stutsman County Medical Society, and the Grand Forks District Medical Society to hold the annual meeting of 1918 at the above-named places.

The House adjourned until 8:30 A. M., Thursday, May 10th.

THIRD SESSION—THURSDAY, MAY 10TH

The House of Delegates convened, and was called to order by the President, Dr. V. J. LaRose. There were present Drs. Widmeyer, French, Woutat, MacManus, A. J. McCannel, Carr, Kranz, Meigs, Stickney, Gerrish, Baldwin, Smyth, Golseth, MacLachlan, and Grassick.

The Committee on the Revision of By-Laws of the Association reported that they were negotiating for the printing of a suitable number of the copies of the constitution with the amendments to date.

The report of the Committee on Medical Education was read and approved:

REPORT OF THE COMMITTEE ON MEDICAL EDUCATION

Your Committee on Medical Education begs leave to report as follows:

The chairman of the Committee attended the Annual Congress on Medical Education, Public Health, and Medical Licensure in Chicago on February 5 and 6, 1917. For a more complete report of the papers presented and the activities of the various bodies taking part in that Congress, see the *Journal of the American Medical Association* for February 17th and 24th, March 10th, April 14th, etc., and the various special reports.

The papers and discussions that would perhaps be of most interest to this body were the report of Dr. N. P. Colwell, Secretary of the Council on Medical Education, a symposium on "Economy of Time in Preliminary and Medical Education," and a paper by Dr. R. O. Beard, of the University of Minnesota, entitled "A Plea for Limiting the Number of Matriculants to Medical Colleges and the Best Method of Procedure for Selecting from Those Who Apply."

Dr. Colwell reported that, in line with the rapid changes for the better that have been going on in medical education during the last twelve years, the number of medical colleges in the United States is now about ninety. The number of medical colleges now requiring for entrance two years of college work, including courses in chemistry, physics, biology, and French or German, is 61, with four colleges in addition making a still higher requirement. The number of State Boards with similar requirements was given as 19; the number is now 21; the boards of 15 other states require something more than graduation from a standard high school. The number of schools has been reduced in twelve years by over 40 per cent, while the number of schools with improved educational standards has been doubled three or four times. The total numbers of students and of graduates in medicine, which have been steadily decreasing since 1904, seem to have reached low tide a year ago, and are now giving promise of gradual increase, but with by far the greater proportions in the high-standard schools instead of the reverse, as was the case fifteen years ago. Movements are well under way by the Council and other bodies, such as the North Central Association, to establish a better classification of colleges of arts and sciences, and with the Council to establish a classification of hospitals that might furnish internships.

In the symposium upon "Economy of Time in Preliminary and Medical Education," Dr. Bevan, chairman of the Council, stated that, as a result of increased requirements, medical graduates in the United States after completing their hospital internships are 28 years of age on the average, whereas, in Germany and England, the average age is from 25 to 26 years. "It is not in the interest of national efficiency for us to graduate our men in medicine two years later than is done in England and Germany. Men at the younger age are more eager, more plastic, and have greater possibilities of a future than men graduating two, three, or four years later." Dr. Bevan concluded that there must be rearrangement in the primary school, the high school, or elsewhere, whereby the time required may be reduced. There was no voice of dissent.

Hon. P. P. Claxton, Commissioner of Education of the United States, President Judson, and Professor Judd of the University of Chicago, and others took part in the discussion. Many reasons for the condition are apparent and were pointed out, from the short school-day and the short school-year, to the greater age of a few who, because of change of mind or other reason, take up the study late, and so bring up the average age. There seemed to be a unanimity of opinion, however, that there are defects in the tandem system of education that has grown up in this country, that are responsible for a loss of at least two years of time in the student's life, and that must be rectified.

The questions of full-time teachers, amount of time to be devoted to any subject, the character and amount of equipment needed for any school, the number of teachers required, the largest practicable unit for management and instruction, and, finally, the limiting of the numbers admitted to any class, have all been discussed in other years. Certain schools have set an arbitrary limit to the numbers they will admit, making their choice as circumstances direct. Dr. Beard, in his paper, made it clear that it is not so much a question of how many a school can reasonably provide for, or a question of fewer graduates being desirable, but that society is vitally interested in the kind of men that are admitted to the profession. He outlined a plan that has been put into operation at Minnesota; first-year medical matriculants last fall were subjected, not only to requirements that told something of the amount of work already done and of character in a perfunctory way, but to physical and psychological examinations, and to evidence of quality as well as quantity in their premedical work. The data to be gained in a few years under this system will, no doubt, be interesting and valuable.

In the meantime, the School of Medicine of the University of North Dakota had already announced a policy of not admitting a student into the first year of medicine unless his premedical work shows a certain standard of quality as well as the usual quantity, in terms of percentages or grades, unless his college work presented for entrance shows an average of at least 78 with 70 the lowest passing mark. We had also announced a policy of not admitting a student previously matriculated in another medical school to any advanced standing unless his record from the other school was free from conditions and failures. This was done, not but what such a student often deserves another chance, but because our numbers are about as great as we can handle with our limited room, and because we feel that it would be better for such a student to make his second start, not in a half school, such as ours, but in a complete school, where he will spend three or four years if he makes good.

To discuss the local situation a little further, you are all aware that the School of Medicine of the University is the only medical school in the state. You are also, no doubt, aware that neither is it a proprietary school, nor does it exist to give any man a job or to add anything in numbers or dignity to the University. It exists because the men responsible for the management of the University understand two important facts regarding medical education: first, that it is important to society that the men and women who attempt to

diagnose and to treat disease be thoroughly trained; second, that with the present developments and high standards, the preparation for the profession is so long and so expensive that the State should take a reasonable part in providing opportunities for instruction. From the start, the school has required for admission two years of college work, including courses in chemistry, physics, biology, and French or German. We consider this the ideal standard; anything less would fail to give the necessary foundation; anything more as a requirement would add to the student's burdens, detract from his enthusiasm and adaptability, start him later in his professional life, and add little, if anything, to compensate for the disadvantages. The school offers work in the first two years of medicine only, with some slight provision for graduate or special courses in the laboratory sciences. A complete clinical school is not to be thought of for many years, if at all. Any possible development that can be foreseen now must consist of strengthening the work already undertaken, the development of graduate courses in connection with the same, and the enlargement of opportunities for study in public-health work. Started possibly prematurely twelve years ago, the school has now over thirty students in the two years of medicine, and there are now fifty students in the premedical group.

Respectfully submitted,

H. E. FRENCH, M. D., Chairman.

The Committee on Nomination of Officers made the following report, which was adopted:

REPORT OF THE COMMITTEE ON NOMINATIONS

President—Dr. G. M. Williamson, Grand Forks.

First Vice-President—Dr. Edgar A. Pray, Valley City.

Second Vice-President—Dr. W. P. Baldwin, Casselton.

Third Vice-President—Dr. Fred Ewing, Kenmare.

Secretary—Dr. H. J. Rowe, Casselton.

Treasurer—Dr. W. F. Sihler, Devils Lake.

Councilors: Cass County, Dr. Paul Sorkness, Fargo; Grand Forks District, Dr. J. E. Countryman, Grafton; Sixth District, Dr. F. R. Smyth, Bismarck.

Delegate to the American Medical Association for two years: Dr. Chas. MacLachlan, New Rockford; Alternate, Dr. James P. Aylen, Fargo.

Physicians recommended to the Governor for appointment on the Board of Medical Examiners: Drs. J. C. Suter, Grafton; A. W. Skelsey, Fargo; Archie D. McCannel, Minot.

Member on Medical Defense: Dr. A. Carr, for five years.

On ballot, Fargo was chosen as the place of meeting in 1918 on May 8th and 9th.

Adjourned.

H. J. ROWE, M. D.,

Secretary.

DISTRICT AND COUNTY ROSTER

CASS COUNTY MEDICAL SOCIETY

PRESIDENT

Tronnes, N. Fargo

SECRETARY

Hanna, J. F. Fargo

Aylen, J. P. Fargo
 Bailey, Fred H. Fargo
 Bailie, W. F. Hunter
 Baldwin, W. P. Casselton
 Bennett, C. E. Aneta
 Brown, W. G. Fargo
 Burton, Paul H. Fargo
 Callander, C. N. Fargo
 Carpenter, Geo. A. Fargo
 Chagnon, Nap. Fargo

Clark, Horace. Wheatland
 Clark, S. B. Buffalo
 Darrow, E. M. Fargo
 Darrow, Kent E. Fargo
 Fish, H. G. St. Petersburg, Fla.
 Gronvold, F. O. Fargo
 Gronvold, A. C. Fort Ransom
 Huntley, H. B. Leonard
 Kachelmacher, C. Fargo
 Labbitt, L. H. Enderlin
 MacGregor, Murdock. Fargo
 Miller, H. W. Casselton
 Morris, A. C. Fargo
 Nelson, W. P. Knox
 Nichols, Arthur A. Fargo
 Nichols, Wm. C. Fargo

Oftedal, Axel Fargo
 Oftedal, Sverre. Fargo
 Ostrander, A. J. Enderlin
 Patterson, A. G. Lisbon
 Patterson, T. C. Lisbon
 Rindlaub, Elizabeth P. Fargo
 Rindlaub, J. H. Fargo
 Rindlaub, M. P. Fargo
 Rowe, H. J. Casselton
 Sand, S. O. Fargo
 Scherer, C. A. Fargo
 Skelsey, A. W. Fargo
 Sorkness, Paul. Fargo
 Wands, E. E. Lisbon
 Weible, R. E. Fargo

DEVILS LAKE DISTRICT MEDICAL SOCIETY

PRESIDENT

Carter, J. A. Warwick

SECRETARY

Drew, G. F. Devils Lake
 Arneson, A. O. McVile
 Call, A. M. Rugby
 Claybough, W. R. Grenora
 Cuthbert, W. H. Crary
 Fawcett, W. C. Starkweather

Floew, A. T. Harvey
 Hayhurst, J. O. Rolette
 Heron, R. C. Tolna
 Horsman, A. T. Devils Lake
 Jones, W. D. Devils Lake
 Lamont, J. G. Dunseith
 Lemieux, D. Dunseith
 Lohrbauer, Ejner. Lakota
 Lund, A. B. Leeds
 McGurran, C. J. Devils Lake
 McIntosh, G. J. Devils Lake

McMurtry, W. C. Wolford
 Moeller, Thor. Devils Lake
 Peppard, T. A. Minneapolis
 Roberts, F. J. Cando
 Sihler, W. F. Devils Lake
 Smith, Clinton. Devils Lake
 Swenson, A. W. Bisbee
 Verrett, B. D. Rolla
 Vigland, J. C. Brinsmade
 Wicklund, C. A. Alamo
 Widmeyer, J. P. Rolla

GRAND FORKS DISTRICT MEDICAL SOCIETY

PRESIDENT

Mulligan, T. Grand Forks

SECRETARY

Friesen, H. J. Grand Forks

Arneberg, J. G. Grand Forks
 Aylen, Chas. H. Drayton
 Beek, R. H. Lakota
 Bentzen, Olaf. Grand Forks
 Bratrud, A. S. Grand Forks
 Burrows, F. N. Bathgate
 Campbell, R. D. Grand Forks
 Countryman, J. E. Grafton
 Dean, Alfred. Grand Forks
 Deason, F. W. St. Thomas
 Eggers, Aug. Grand Forks
 Ekern, A. San Diego, Cal.
 Emert, H. F. Sarles
 Engstad, J. E. Minneapolis, Minn.
 French, H. E. University

Galbraith, J. E. Cavalier
 Gislason, G. J. Grand Forks
 Glaspel, G. W. Grafton
 Grassick, Jas. Grand Forks
 Harris, C. B. Pembina
 Healy, H. H. Grand Forks
 Irby, M. R. Lankin
 Irwin, S. H. Grand Forks
 Johnson, John A. Petersburg
 Joistad, A. H. Fairdale
 Kamman, H. F. Taylor
 Kirkham, J. H. Langdon
 Landry, L. H. Wallhalla
 Law, H. W. F. Grand Forks
 Lommen, C. E. Fordville
 McLean, R. M. Gilby
 McQueen, W. W. Langdon
 Marsden, C. S. Grand Forks
 Morris, V. G. Watford
 O'Keefe, Henry. Grand Forks

Peterson, O. T. Northwood
 Sandven, N. O. Willmar, Minn.
 Scott, R. A. Crystal
 Smith, J. C. Thompson
 Suter, J. C. Grafton
 Taylor, J. D. Grand Forks
 Thompson, A. Y. Niagara
 Towey, J. W. Langdon
 Wagar, W. D. Michigan
 Waldren, H. M. Drayton
 Walker, J. J. Cavalier
 Weed, F. E. Park River
 Welch, W. H. Larimore
 Westeen, A. A. Grand Forks
 Wheeler, H. M. Grand Forks
 Williamson, G. M. Grand Forks
 Wilson, W. C. Grand Forks
 Witherstine, W. H. Grand Forks
 Wood, Chas. Neche
 Woutat, H. G. Grand Forks
 Wylie, A. R. T. Grafton

KOTANA MEDICAL SOCIETY

PRESIDENT

Jones, C. S. Williston

SECRETARY

Strong, T. J. Williston

Chapman, W. S. Alexander
 Distad, O. E. Williston
 Gray, W. H. Ray
 Hagen, E. J. Evanston, Ill.

Johnson, P. O. C. Watford
 MacManus, F. W. Williston
 Scott, W. B. Ray
 Skovholt, H. T. Williston
 Trainor, M. E. Williston

NORTHWESTERN DISTRICT MEDICAL SOCIETY

PRESIDENT

McCannel, A. J. Minot

SECRETARY

Yeomans, T. N. Minot

Blatherwick, W. E. Van Hook
 Brigham, F. O. Stanley
 Brugman, F. A. Minot
 Campbell, R. W. Deering
 Carr, Andrew. Minot
 Christie, F. J. Burlington
 Coffin, G. H. Drake
 Craise, O. S. Towner
 Cramond, J. E. Rugby
 Critchfield, L. R. Kenmare
 Darland, F. L. Sawyer
 Devine, J. L. Minot
 Durnin, C. A. Pasadena, Cal.
 Durnin, G. A. Saskatoon, Sask.
 Erenfeld, H. M. Minot
 Ewing, F. Kenmare
 Ewing, John. Kenmare
 Fisher, H. Z. Lansford
 Fitzmaurice, E. S. Mohall
 Flath, Milford G. Stanley
 Frogner, G. S. Parshall
 Grangaard, H. O. Douglas

Green, E. E. Westhope
 Guinberg, Wm. Omamee
 Hallderson, M. B. Souris
 Hanson, G. C. Minot
 Hillis, S. J. Berthold
 Holliday, James. Mohall
 Irvine, H. T. Russell
 Irvine, V. S. Bantry
 Jackman, J. E. Minot
 Johns, S. M. Velva
 Johnson, J. A. Bottineau
 Kermott, L. H. Minot
 Kerner, C. A. Hazen
 King, C. J. Columbus
 Knapp, H. G. Minot
 Knudson, K. O. Glenburn
 Kolb, F. K. Granville
 Lancaster, Blake. Crosby
 McCannel, Archie D. Minot
 McLean, N. B. Kenmare
 Mackay, A. R. Bottineau
 Moffatt, Geo. Donnybrook
 Moreland, J. W. Maxbass
 Myklestad, Nils, Los Angeles, Cal.
 Nestos, P. A. Minot
 Newlove, J. T. Minot
 Nicholson, A. S. Max

Nuessle, W. G. Lansford
 Nugent, O. B. Minot
 Overgard, S. Minot
 Paulson, A. J. McVile
 Pence, J. R. Minot
 Pence, R. W. Minot
 Perrin, J. A. Antler
 Pierson, C. M. Ambrose
 Plourde, W. A. Overly
 Presler, H. M. Anamoose
 Ransom, E. M. Minot
 Ray, R. H. Garrison
 Ringo, G. Roy. Minot
 Rogers, Joseph. Alexander
 Rollefson, C. O. Ambrose
 Rudel, G. L. Plaza
 Semple, James. Minot
 Smith, J. A. Noonan
 Somers, A. J. Portal
 Steeves, E. O. Rugby
 Stone, E. C. Balfour
 Van de Erve, Hubert. Sherwood
 Van de Erve, Walter. Sherwood
 Welker, A. J. Dogden
 Wheelon, F. E. Minot
 White, S. G. Ambrose
 Youtz, H. LaMont. Willow City

RICHLAND COUNTY MEDICAL SOCIETY

PRESIDENT

Devine, Robt. H. Wahpeton

SECRETARY

O'Brien, T. Wahpeton
 Bean, O. G. Walcott
 Christensen, W. Lidgerwood

Dahleen, H. E. Hankinson
 Durkee, C. A. Dwight
 Greenman, N. H. Fairmont
 Ivers, M. U. Abercrombie
 Jacobs, G. C. Wahpeton
 Maertz, W. F. Lidgerwood

Ryan, D. E. Hankinson
 Sasse, E. G. Lidgerwood
 Shields, N. J. Wahpeton
 Steele, D. C. Fairmount
 Wiig, I. C. J. Wahpeton
 Wilder, K. W. Wyndmere

SHEYENNE VALLEY MEDICAL SOCIETY

PRESIDENT

Macdonald, A. C. Fingal

SECRETARY

Zimmerman, S. A. Valley City

Almklov, Lief. Cooperstown
 Aylen, W. C. Litchville
 Benson, R. D. Hannaford
 Brimi, C. L. Cooperstown

Caldwell, T. J. Wimbleton
 Crosby, E. B. Oriska
 Hunt, C. E. Valley City
 Kellog, P. M. Rogers
 Lang, A. A. J. Sanborn
 LeBien, E. A. McHenry
 Macdonald, A. W. Valley City
 Nesse, S. A. Nome
 Nolte, W. C. Dazey

Platou, L. S. Valley City
 Pray, E. A. Valley City
 Spicer, C. E. Valley City
 Stixrud, T. M. Litchville
 Truscott, J. R. Binford
 VanHouten, J. Valley City
 Wanner, W. B. Wimbleton
 Westley, M. D. Cooperstown
 Wicks, F. L. Valley City

SIXTH DISTRICT MEDICAL SOCIETY

PRESIDENT

Altnow, H. O. Mandan

SECRETARY

Bodenstab, W. H. Bismarck

Arnson, J. O. Bismarck
 Baer, DeWitt. Glen Ullin
 Benson, O. T. Glen Ullin
 Brandt, A. M. Bismarck
 Bunting, F. E. Mandan
 Cain, W. T. Underwood
 Dunlap, L. G. Bismarck
 Eastman, L. G. Hazen
 Fisher, A. M. Bismarck
 Gaebe, E. C. Halliday
 Gaebe, O. C. New Salem

Griebenow, F. F. Bismarck
 Kranz, M. Mandan
 LaRose, V. J. Bismarck
 Lipp, G. R. Bismarck
 Lodge, F. B. Steele
 MacLachlan, T. M. Bismarck
 Mathews, G. A. Napoleon
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PRESIDENT'S ADDRESS

By VICTOR J. LAROSE, M. D.
BISMARCK, NORTH DAKOTA

I take this opportunity to express to you my appreciation for the honor you have conferred upon me by electing me President of your Association. I also wish to thank the officers and the different committees for their help and hearty co-operation with me in my efforts to administer the affairs of our State Association through the uncertainties of this most eventful past year, a year marked by an epidemic throughout this country, which, in addition to a high mortality, has left in its wake thousands of crippled children, who must soon enter the wage-earning period of life, and compete with their more fortunate brothers under a handicap of physical deformity; a year marked by frightful loss of life, due to war and pestilence in Europe; a year in which the war clouds, ever gathering on the horizon, have at last broken on our unprepared and well-nigh defenseless nation.

When the subject of unpreparedness was brought up, the general public was usually of one mind in estimating how many battleships, submarine chasers, airplanes, and such like could be manufactured within a short space of time. The subject of "Medical Preparedness" had scarcely been given a thought even by our own profession. It is a well-known fact that during the first year of the European war there was an appalling lack of medical supplies and surgical dressings and appliances. This condition of affairs in Europe has brought the subject of medical preparedness before the American Nation in such a way that it can not be ignored.

In order that the medical department might keep pace with other phases of preparedness, a committee of American Physicians for Medical Preparedness has been chosen by the presidents of the five leading medical and surgical associations in the United States, for the purpose of aiding the medical department of the Army and Navy in ascertaining the civilian medical resources of the country. Its purpose was not to influence any decision for or against military preparedness, but to help provide information which will aid in making the one humanizing, life-saving department of military service keep pace with other phases of preparedness. State committees, consisting of nine men each, have been appointed to co-operate with the National Committee. The first work they did was to make a

complete inventory of medical men in good standing in each state, giving age, special qualifications, and other necessary information. This was forwarded to the Surgeon-General of the Army in order that he might endeavor to interest medical men to become members of the Officers' Reserve Corps.

After the National Committee had completed the inventory of medical men, the next work taken up consisted of making as near a complete inventory as possible of the medical and surgical resources of the United States. Inventory blanks were sent to the state committees to be filled out, giving information as to hospital facilities and equipment, such as sterilizers, operating-tables, stretchers, wheel-chairs, x-ray and laboratory appliances and supplies. Inquiry was made as to transportation facilities by rail and water; also about buildings or institutions that could be used to care for those made dependent by dire calamity.

The American National Red Cross and the Committee of American Physicians for Medical Preparedness are working so much along the same lines, that, in order to secure harmonious co-operation between these two agencies, it has been determined that they shall work through committees which are, as near as possible, identical in composition. Thus the state committees, acting for the Red Cross, will be the same as those appointed by the Committee of American Physicians, and their office will furnish a means of communication between the chairman of the National Committee on Red Cross Medical Service by consulting with the state committee as a whole or as individuals. In our state, subcommittees selected from each component society have been appointed by the state committee. It is hoped that in this way every individual physician in the state can be approached, and the opportunity extended to him to show red-blooded Americanism by holding himself in readiness to make any sacrifice necessary to render all assistance possible to the National Committee through the local and state committees.

The war in Europe has brought up many problems, both from a medical and surgical standpoint. It was shown early in the war that 80 per cent of the amputations, 95 per cent to 98 per cent of secondary hemorrhage, and 75

per cent of deaths which occur after the first twenty-four hours, were all due to infection. Carrel's early studies were directed to avoid this. Vast numbers of methods and disinfectants were studied and tested. Dakin's solution of sodium hypochlorite was selected as a disinfectant on account of its non-toxic and non-irritant properties. The disinfectant is made to reach all cavities in the injured tract by means of perforated rubber tubes introduced into them, the fluid being allowed to flow continuously or intermittently. Cultures are taken daily. As soon as the wound is aseptic, which is usually about five days, it is sutured without drainage.

The American surgeons attached to the Red Cross in France have adopted the Carrel method. Lyle of New York, Chief-of-Ambulance, Oise, France, says of the adoption of Carrel's method there: "The transformation observed was startling. In our service during four and a half months there were no secondary abscesses, only one case of osteomyelitis, and no amputations for infection."

German surgeons have not, as a rule, adopted the Carrel method. Fehling is a strong advocate of the "open" treatment of wounds. With this treatment the wound is not placed in an occlusion bandage. Seafisch sees no future in this treatment, but adheres to the older methods approved by von Bergmann, namely, resection, occlusion, careful watching, and asepsis. Conservative surgery is the rule in all clinics. Amputations are avoided unless absolutely indicated. Plastic surgery has received a great impetus. Abdominal wounds with intestinal perforation have shown a high percentage of mortality, and in such cases the old conservative procedure has been abandoned and immediate operation is the rule.

Prophylactic treatment has generally removed the danger of tetanus, which was a great menace in the early part of the war. Another point of interest is the great development of artificial prosthetic apparatus of all kinds, some of which is most ingenious.

The entire German army was immunized by typhoid vaccine. A second inoculation was practiced six months later. The number of cases of typhoid immediately decreased after vaccination. Armies equal to the population of a large city showed no cases of typhoid. Though dysentery was prevalent, typhoid did not appear. Mortality was decreased from 9.6 per cent in the non-immunized to 2.6 per cent in those who had been re-immunized.

On the Western front there are no war diseases of the so-called epidemic nature at present. Typhus and typhoid appeared in the beginning when sanitary precautions were not so well and fully organized, but they have since been stamped out. Turkey still has typhus. Generally, the health of the troops is better than it was a year ago, and continues to improve. The war has not brought about any serious epidemic among the people, except in Servia and parts of Austria, where typhus and cholera were responsible for many deaths.

The American Ambulance Corps at the French front is made up of eight sections, each containing twenty automobile ambulances and seven auxiliary automobiles (kitchens, repair shops, etc.). The initial cost was two hundred and forty thousand dollars, and yearly maintenance one hundred and twenty thousand dollars. All of the American ambulance men who have volunteered are students of the large universities. Many of these men have received the military medal for bravery.

The widespread prevalence of venereal disease in the armies of Europe has caused a great deal of agitation for the control of this disease in Europe, as well as in our own country. It is estimated that the number of syphilitics in the European armies numbers hundreds of thousands. They are being treated in hospitals, while sound and healthy men are being shot down in their stead. This actually places a premium on sexual infection, for the healthy have no chance of a few months respite in the hospitals. The great problem is how to control the venereal peril without violating the sacred confidence and so-called personal liberty of the individual. The committee appointed by the British Medical Association unanimously decided that any system of compulsory notification would entirely fail to obtain the results desired. In Germany free public clinics have been established throughout the country, and at a recent meeting of the German Preventive Society, Hahn of Hamburg stated that consulting headquarters had been established all over Germany by the Social Insurance Boards. In Hamburg they are proving so popular that the accommodation has had to be increased. Those with venereal disease are very glad to get advice and treatment free, and the Free Specialist Consulting Dispensary is forming a powerful means of defending the public against quacks.

The American Public Health Association has taken up the study of the venereal problem, and

its recommendations are along the line of free clinics with day and evening sessions, special hospital beds, and compulsory notification. In California venereal disease is reportable by case number. Vermont requires notification also. Western Australia has the most drastic law. It provides free facilities for diagnosis and treatment, and a person with an infectious venereal disease must be treated under penalty within a certain time. Such treatment must be continued under penalty of fine or imprisonment.

A survey of the cancer problem in the United States shows there has been a slow increase in mortality since 1880. It has moved up from seventh place, in 1900, to fifth, in 1914, in the mortality group. In 1900 the death-rate was 63 per 100,000 population; in 1914, it was 79.4. This is taken from the report of the registration area, which includes about two-thirds of the entire population. The rate for 1915 is stated to be 81.1 per 100,000. The mortality is greatest between the ages of sixty and sixty-four, although no age seems exempt, as 1913 English statistics show that between the ages of five and fourteen the mortality rate was 1.7 per 100,000; from fifteen to twenty-four it increases to 3.9, and from there on it rises rapidly. There are more women than men afflicted, especially between the ages of twenty-five and fifty-five years. Stomach, liver, and female genitalia show the highest mortality. Untiring scientific investigation has as yet given us no knowledge of the real cause. The treatment of cancer by operative measures in the hands of the more skilled surgeons, where the diagnosis has been made early is giving improved results, especially when preceded and followed by massive Röntgen therapy. It behooves every medical man to be continually on the watch for signs of early malignancy. While the early diagnosis is difficult, the treatment is easy and successful. The later the diagnosis the easier it can be made, but the more difficult and hopeless the treatment becomes.

The persistent work done in the study and prevention of tuberculosis has born fruit, as is shown by statistics, which prove that from the period of 1904 to 1915 the death-rate has fallen from 200.7 per 100,000 to 145.8 per 100,000. Knopf estimates the annual deaths in the United States from tuberculosis to be 200,000, about 50,000 of which are children. Estimating the average age of the 50,000 children at seven and a half years, and the annual cost to the parents at \$200, the financial loss by the early deaths is \$75,000,000.

The 150,000 adults have been ill and incapacitated for at least two years, and figuring their loss at \$1,000 each per annum, there is a \$300,000,000 expenditure that might have been prevented. About two-thirds of all deaths from tuberculosis in adults occur between the ages of sixteen and forty-five years,—the most productive period. This represents an additional \$500,000,000. Thus the actual direct loss caused by tuberculosis in the United States amounts annually to something like \$900,000,000. There is as yet no specific treatment for tuberculosis. Earlier diagnosis and institutional care are responsible for the better prognosis and steady decline in the death-rate. Great progress has been made in the treatment of surgical tuberculosis. Long exposure to the sun at high altitudes with open-air exercise have effected marvelous cures.

Within the past two years, Rosenow, Billings, and others have published various articles in which they have proven that rheumatism and infective endocarditis are direct results of acute tonsillitis. The organisms appear to be a diplococcus and a hemolytic streptococcus. They seem to have an affinity for avascular regions, such as joint surfaces and heart-valves. Defective bone-cavities found about root-ends of pulpless teeth are one of the most frequent causes of local infection. In one hundred out of one hundred and sixty-two cases of chronic oral infection, definite blood-changes were found as a sequence of the infection. Mere extraction of teeth does not seem to be sufficient to eliminate peri-apical infection, but in addition a thorough curettage of the infected tract seems necessary. When infection is suspected, careful radiographs of the teeth will show bone changes due to infection in all but the acute cases.

With the coming of summer the question of the poliomyelitis epidemic again confronts us. Cases are already being reported, and vigorous measures should be adopted to prevent its spread. This will apparently be a hard matter. Although it is probably a contact disease transmitted by healthy carriers, it seems that only certain ones are susceptible; therefore, immunes may innocently infect others. It has been estimated that during the past year there were about 35,000 cases in the United States with an average death-rate of 20 per cent. About one-third of the survivors will suffer from residual paralysis. The method of propagation is not yet definitely known.

The specific germ has not been isolated with

certainty. Rosenow and others have isolated from the throats and tonsils of poliomyelitis cases a peculiar streptococcus, which, when injected into animals, produces paralysis. This streptococcus has been recovered from the nervous system of such injected animals. Mathers reports the isolation of an apparently similar organism. He found that the serum of rabbits immunized against different strains of poliomyelitis cocci contains antibodies which are apparently specific for the poliomyelitis organisms. If these results are verified, the outlook for a specific immune serum will seem encouraging.

In the registration area of the United States during the year 1915, the number of deaths reported due to preventable causes was 280,059. Adding one-third more for other parts of the United States, it would bring the number up to nearly 400,000. These do not include pellagra and avoidable infantile mortality, diarrhea, etc., which, if definitely known, would greatly increase the figure. A recent magazine article on the European war gives the total mortality for both sides at approximately 4,000,000. It is probable that the actual deaths from wounds and disease, due to the war, would not exceed 3,000,000, or about one million for each year of the war.

The number of deaths in the United States which could be avoided *if preventive measures were better known and more extended* equals, within a comparatively few years, the frightful loss of life due to the war in Europe. Even if it is assumed that preventable deaths in the United States are annually only 200,000, and that the loss on the average of these lives is ten years' productivity at \$500 per annum, then the total annual loss equals one thousand million dollars, which would be *continuous* and would be within the cost of an average war.

Legislation in the form of compulsory health insurance is being sought primarily by the American Association of Labor Legislation, which is allied with similar associations in Europe. Bills patterned after the health-insurance laws of European countries with the objectionable features eliminated, which, experience has shown, would make them unpopular in this country, have been submitted to the Legislatures of New York, Massachusetts, and some Western states. The benefits of health insurance to the insured are the following: It provides medical attendance of their own choice, advice, treatment and medicines; also hospital and surgical treatment when necessary. It also has been suggested that the

control of cancer and tuberculosis will be more complete, because the insured will seek medical advice much earlier than they would if they had to pay for consultation. Objections raised are the following: The cost will be more than the average workman now pays for protection, the thrifty and careful livers will have to pay for the careless, and the measure is un-American, interfering with individualism and substituting paternalism. The insured are limited to those under a certain income. The cost is divided between the insured, their employers, and the State. The time to study this problem is while it is in the formative stage, so that any time the proposition does come up it can be accepted or rejected. I would recommend that a committee be appointed to compile information in regard to social insurance and the relation of physicians thereto, and report at our next annual meeting.

The medical profession of today is directing its energies more to the prevention of disease than ever before on the theory of the old saw, "An ounce of prevention is worth a pound of cure." Strange as it may seem, the majority of the general public either cannot or will not admit that the physician is working directly against his own interests by advocating these measures; therefore, whenever medical legislation for the prevention of disease and improvement of public health is advocated, the public goes on a still hunt for the "nigger in the woodpile," and wonders what new scheme the doctors are up to now to get more money out of the people.

A health bill to create a commission made up of state officials who were to serve without pay was introduced in our last legislative session. It carried with it the authority of this commission to hire a competent man who would give his whole time to the health problems of the state. The principal requirements were that he should be skilled in sanitary science and health matters so that he could make sanitary surveys of the state, study water supplies, disposal of sewage, and investigate the source of disease. This bill was killed on the floor of the House after several *eloquent*, though not *elegant*, speeches were made in which the medical profession, as a whole, was referred to as a "trust" and its members as "grafters." It may be of interest to note that before the bill came from the committee, the members of the House and Senate were flooded with letters and telegrams from a certain cult whose claim is "there being no such thing as disease, health measures for its prevention are superfluous." Now, what is responsible for this

condition of affairs? To my mind it is lack of organization and publicity. Before criticising our legislators, it would be well to put our own house in order. We have been going before the Legislature each session asking for health legislation and appropriations for carrying on the same. To us and to those who understand, the issue is meritorious and badly needed, but to the majority of legislators it comes unheralded and unsung. It is strange to them, something they have heard but little of and consequently have given it little thought. They cannot make up their minds on the spur of the moment just what action to take. Is it any wonder that during this period of indecision they can be easily influenced to vote the measure down as the easiest way of disposing of it? If we could so educate the general public that they might realize the benefits they would derive from good health legislation, we would not have to ask our Legislature to pass health laws. Public sentiment would insist that as citizens and taxpayers they use adequate means to protect them from preventable diseases; and, when the public in general demands legislation, they usually get it. I believe that such information should be given to the public as may be needed to protect them from preventable disease; and we as physicians, one and all, have a duty to perform in disseminating this information. More and more the public is asking for these things, and we should prepare ourselves to give health talks before women's clubs, churches, schools, etc. If, on Tuberculosis Sunday or Public Health Sunday we should feel out of place addressing a church congregation, I am sure we could at least give the ministers statistics and material for a public health sermon.

Our state and local societies should be better organized. It seems to me there must be something wrong somewhere when less than half the number of physicians in good standing in the state belong to their local and state societies. I believe that many more qualified physicians would become members if a little persistent pressure were brought to bear upon them. This applies especially to the younger men coming into the state, who, in many instances when locating in a community, feel they are there in opposition to the older men; therefore, they are somewhat diffident about applying for membership. What have our county and state societies to offer that would induce physicians to affiliate with them? There is the opportunity to become acquainted and rub elbows with their neighbors at least once a month at the local societies, the opportunity to

compare notes, and present papers at the state and county society meetings, as there is nothing that develops the physician more rapidly than does the preparation and presentation of cases or scientific papers. There is also the medical defense feature, which is of great benefit to members as a protection from malpractice suits which are frequently attempts at evading payment of bills presented for services rendered, or are instigated by unscrupulous persons who think they can hold up the physician and force a settlement from him to avoid the publicity of a damage suit—nothing more or less than deliberate blackmail. Last but not least, there is our official Journal which publishes all papers read at our state meetings and those of our neighboring states, and, in addition, many timely articles from men prominent in medicine and surgery throughout the country.

I would suggest that some arrangement be made that when a new practitioner is granted a license to practice, he would receive an application blank to fill out for membership in the society where he intends to locate, and the secretary of the local society be notified, so that he might write a personal letter inviting the new man to attend the next local meeting, thus making the recent arrival feel that he is working not in competition but with his neighbor. A system along these lines would bring most of the new men into our Association. I would recommend that an appropriation be made sufficiently large to pay traveling expenses and salary per diem, so that the Secretary of our State Association could afford to visit every district in the state as an organizer, and thus act as a stimulus to indifferent officers and members who have allowed their local societies to fall into a state of lethargy. He could act as councilor at large, adjusting differences arising in local societies, and cement a friendly relationship between all of the members. He could be ex-officio member of all committees, and thus stimulate action in such matters as legislation, publicity, health matters, school inspection, etc.

I would recommend that every teacher in our schools be required to present a certificate of good health before being allowed to teach, as cases of open tuberculosis have been discovered among teachers which, of course, is a menace to every child in the school-room.

In conclusion, I wish to extend on behalf of this Association a hearty and cordial welcome to those who are with us as guests, and accord to them the privileges of the floor in discussions.

GETTING RETURNS FROM SANATORIUM INVESTMENTS*

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Large expenditures are incurred for the erection and maintenance of public hospitals for tuberculosis, and it is natural that inquiries should be made by interested tax payers as to their real value to the community.

Tuberculosis is one of the greatest health problems before the people today. Few of us realize this fact until the disease enters our own homes. In some families the havoc caused is terrifying in the extreme. In one Duluth family a mother lost, first, her husband, then her son, and then a daughter. In another the father lost his wife and two sons; and now he himself, two daughters, and another son are afflicted with the disease in a serious form. Such instances bring home the threatening menace to success and happiness which hangs over many lives. Again and again we see young men and women, talented and efficient, apparently with most useful careers before them, stricken as by a curse, and all their hopes and ambitions blighted. None of us whose dear ones have suffered can ever fail to realize the tremendous importance of the subject.

Ever since the International Congress of 1908 the care of advanced cases in hospitals or sanatoriums has been advocated as one of the most efficient measures yet devised for combating the disease.

Patients with advanced disease expectorate more germs than those with less involvement of their lungs, and are frequently unable to take all the precautions necessary to prevent spreading infectious material abroad. It is a well-established principle in the control of any communicable disease that the removal of the centers of infection protects the community from the disease.

The National Association and the various State Anti-Tuberculosis Associations have therefore entered upon a definite campaign for the establishment of such hospitals near the homes of the patients. New York, Chicago, and several other large cities have built their own sanatoriums, but the county is generally considered the political division most adapted for the undertaking of the enterprise, especially if rural communities are to receive its benefits.

As the work has progressed in different com-

munities it has been found desirable to establish definite standards as regards the care of patients in such institutions. The National Association for the Study and Prevention of Tuberculosis appointed a committee to investigate the matter and make a report. This report was published in the Transactions of the Ninth Annual Meeting of the Association and concludes with the following summary:

The hospital for advanced cases of tuberculosis should be so situated, constructed, and managed as to draw from the community the vast number of advanced cases spreading infection *in family circles*, in addition to the group of homeless or near-homeless cases, forming at present the bulk of cases in such institutions. In the interest of the community, as well as of the individual patient, the admission of these cases to an institution should come *early in their course*. With the right arrangements and regime calculated to relieve the suffering and lead, where possible, to improvement or arrest of the process, the hospital for advanced cases is bound to win rapidly the support of the medical profession and the community, and become a powerful agency in the fight for the suppression of the disease.

It occasionally happens that a well-equipped sanatorium is built, and fails to accomplish its purpose. Its resources are not fully utilized by the community, and the hospital is not kept filled to capacity. A careful perusal of the National Association's report will in many cases make the reason clear.

In some cases the mistake has been made of connecting the institution with the county almshouse. Every county almshouse and county hospital should, of course, make separate provision for its tuberculosis inmates, and in Minnesota they are required to do so by law; but it is a mistake to suppose that a separate ward or building at the almshouse can take the place of a county sanatorium. Even if the best care were provided it would be impossible to induce the people most in need of it to apply for admission. Only those absolutely without any other place to go would consent to stay there, and they are really much less dangerous to the community than the invalids stricken in their own homes surrounded by their children. Sometimes a sanatorium fails to secure as many clients as it should, not because it is located at the almshouse, but because it is conducted very much like an almshouse. The patients are treated as

*Read before the Goodhue County Medical Society, Red Wing, Minn., June 1, 1916.

objects of charity, are called county charges, inmates, etc., and the cost of maintenance is reduced to a poorhouse basis. Self-respecting people are naturally not readily induced to enter such institutions.

It is possible to reduce the cost of maintaining a sanatorium to a very low figure if it is regarded merely as a boarding-house where no attempt is made to provide modern scientific treatment and where the patient is given a minimum of more or less perfunctory medical and nursing care on the assumption that he is going to die any way. A low per capita cost may be a disgrace to the institution and to the community if it is secured through sacrifice of the interests of the patients. A sanatorium is not to be considered as a charitable institution, but, rather, as a hospital, and hospital expenses cannot be judged by the same criteria as the maintenance cost of almshouses, work-farms, or jails.

If the attitude is taken by the physicians, nurses, or other employees, that the patient is doomed, the institution will not be popular. "Homes" for consumptives have not been a success, either abroad or in this country. A definite attempt and a strenuous one must be made to secure for the patient whatever degree of health is possible for him. In many apparently hopeless cases several years of comparative comfort and usefulness can be secured by skillful management.

The services of handicapped citizens are quite worth the trouble of saving and using for the community's good as is being demonstrated by every country engaged in the European war. Many patients with arrested tuberculosis will live as long, and, if given the opportunity, will do as much for the community, as other citizens in apparently good health. In every tuberculosis hospital surprising instances occasionally occur of marked improvement of far-advanced cases. This happens often enough to make it necessary to provide the best possible nursing and medical care for all, together with opportunities for the employment of arrested cases as far as their health will permit.

Though under ideal conditions home treatment may be in some instances as successful as sanatorium treatment, usually, the chances of recovery at home, even where the family has plenty of means, are very much less than in a sanatorium. The careful supervision, the force of example, the drill which establishes good habits, cannot be obtained in any home as satisfac-

torily as in a well-managed institution. As a general rule it may be said that no family physician has the right to undertake the management of a case of consumption at home when it is possible for the patient to enter a good sanatorium. If he attempts it or permits it, yielding to the pleading of the patient or his relatives, he is risking the patient's best interests. Too often he allows the patient to escape from any kind of supervision by going away to a farm or to a distant health resort. Every case should have the benefit of at least a few weeks' drill in sanatorium methods, obtained by actual residence in one.

Sanatoriums are thus indispensable to the community from a humanitarian standpoint entirely apart from their value in affording protection from a communicable disease.

The incipient cases especially should have the benefit of special care at the earliest possible moment. The presence of such patients in an institution will entirely change the atmosphere of the place. The fact that some patients are getting well will give hope and courage even to the most discouraged and to those with far-advanced disease. Physicians must, therefore, be on the alert to detect early cases, and recommend sanatorium treatment for them. The presence of slight fever, nightsweats, hemorrhages, and similar signs of activity, should influence the physician more than the doubtful physical signs in the chest. Do not neglect sputum examination, but, if tubercle bacilli are not present, do not overlook other symptoms. Even after the diagnosis is made, physicians are often directly responsible for the disinclination of patients to enter a county sanatorium on account of their failure to recommend such a course to any but the hopelessly ill.

An exaggerated phthisiophobia may be the reason for the refusal of interested people to visit the institution and so help it in its work, as it is often the deciding factor in keeping the patient at home. He does not want to go where there are so many people sick with the disease. He is afraid he may contract it in a worse form.

We now know that most persons have passed through a tuberculous infection in childhood, and that the pulmonary tuberculosis of grown people is usually due to the breaking down of the power of resistance to this original infection rather than to contact with consumptives during adult life.

That infection does rarely occur in adult life

is not denied, but, if people were half as much afraid of stirring up their own disease by foolish living, late hours, intemperance in eating and drinking, and other dissipation, as they are of coming in contact with a patient, there would be far less consumption than there is. Children, especially little children, are the ones who need protection from careless consumptives.

As to the likelihood of tuberculosis infection occurring in a well-conducted hospital, the following from Fishberg¹ may be of interest:

It has never been observed that a mildly infected patient living in an institution has been reinfected from one severely infected who shares the ward with him, even when the latter expectorates myriads of virulent bacilli, and offers exceptional opportunities for droplet infection.

Many non-tuberculous patients remain in sanatoriums for months, yet it has not been observed that one becomes tuberculous because of his sojourn in the hospital.

The hospital staff, including physicians, especially laryngologists, nurses, orderlies, etc., come in close contact with the patients in sanatoriums and should become infected if adults, presumably infected during childhood, could be reinfected with tubercle bacilli. But, if experience of thousands of people in these callings counts for anything, they do not show a higher mortality or morbidity from tuberculosis than persons in other occupations. The first statistics bearing on this problem were published by C. Theodore Williams, who showed that long before the discovery of the tubercle bacillus, and before any precautions were taken to prevent the transmission of the disease, no case of infection of the hospital staff had been observed. From 1846, when the Brompton Hospital for consumptives was opened in London, to 1882 statistics showed that among the physicians, assistant physicians, hospital clerks, nurses, and others, to the number of several hundred, who had served in the hospital (not a few of them having lived in it for a number of years continuously), phthisis had not been more common than it might be expected to be on the average among the civil population of the town.

In a later paper Williams brought these statistics down to 1909, and found that conditions remained the same. But while during recent years the improvements in hygienic conditions and disinfection of sputum may be the cause of the rarity of phthisis in the hospital staff, this cannot be said to have been operative before 1882.

Similar statistics are available for hospitals in Germany and France, published by Aufrecht, Freymuth, Brunon, Saugman, and others, and brought together by Fishberg in a paper on hospital infection.

Such facts seem to indicate that reinfection of adults is, under ordinary circumstances, unusual,

and that the children are the ones in special need of protection from exposure to infection.

In St. Louis County we have found the free tuberculosis clinic at the Court House and the work of the Duluth anti-tuberculosis nurses most helpful in keeping the sanatorium filled to capacity. Too much cannot be said of the value to the community of a tactful nurse in discovering cases that need sanatorium care, and in persuading them to go to one when they are not quite ready to seek admission themselves.

The fact that there are a large number of persons in the community needing care is not always apparent on superficial observation. When a county hospital was proposed in a certain county in New York a member of the board of supervisors stated that he had investigated and found that there were a few consumptives at the County Almshouse and a few at the Hospital for Incurables. These he believed were all that required institutional care. Today that county has a well-equipped sanatorium, and actually has had to find places for many times the number then in institutions.

There are always patients enough right in the county needing hospital care to more than fill a county sanatorium. The number of patients having the disease is found approximately by multiplying the annual number of deaths by ten. Of these only a portion need hospital care, but even if this estimate were cut in two there would still be cases enough to fill the county institutions more than twice over, assuming that they accommodate only a number equal to the annual death-rate.

The tuberculosis clinic or dispensary forms a valuable social service or follow-up department for the sanatorium. Discharged patients, as well as those awaiting admission, report there, and, with the help of the visiting nurses, it is frequently possible to supervise the life of a consumptive from the day his disease is discovered until he is well or dead.

At the sanatorium, beside good medical and nursing care, suitable entertainment and employment must be provided. It must be recognized that the patient is a person, generally a self-respecting American citizen, and any tendency of the staff or nurses to treat him as an inmate or as a case merely must be discounted.

At the present time not many patients can be legally compelled to enter a sanatorium, and it

1. Fishberg: *Pulmonary Tuberculosis*, Lea Brothers & Co., New York, 1916.

would keep out the people who most need help and who protect the community most by going to the institution, if going there came to be regarded as a punishment rather than an opportunity.

In conclusion, that sanatorium will make the strongest appeal to the patients and the community which makes the most serious and effective effort to give modern hospital treatment. When this is thoroughly understood it will not be necessary to ferret out candidates for admission; they will present themselves of their own accord. Until this is thoroughly understood, physicians, visiting nurses, and the friends of the institution must co-operate in giving the sanatorium a good reputation as a first-class health resort. Sanatoriums have a twofold function: They protect the community from a communicable disease, and afford citizens facilities for modern care and treatment. It will be more expensive to get along without them than to have them.

BOOK NOTICES

CLINICAL TUBERCULOSIS. By Francis Marion Pottenger, A.M., M.D., LL.D., Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, Cal. With a chapter on Laboratory Methods by Joseph Elbert Pottenger, A.B., M.D., Assistant Medical Director, Pottenger Sanatorium. Cloth. Price, \$12. Pp. 1420, with illustrations. St. Louis: C. V. Mosby Company, 1917.

The author gives us in these volumes an exhaustive review of his field of study covering many fruitful years of experience. He treats the subject from the broad viewpoint of the clinician in internal medicine.

The book is not written in text-book style, but is a series of monographs; and for that reason it is somewhat difficult to review in a logical manner. The diction is clear and direct and the style very readable.

Dr. Pottenger emphasizes the now generally recognized fact of universal infection with the tubercle bacillus in early life and the great importance of making diagnosis of latent or partially latent lesions present in children.

This is a disease primarily of the lymphatic system, the primary focus usually being in the tracheal and peribronchial glands. The infection is in the direction of the natural current of the blood rather than against the current of lymph which flows from the apex toward the hilus. Pulmonary tuberculosis is therefore a metastatic tuberculosis. The primary pulmonary lesion is apical in location. This is in opposition to Gohn's belief that the primary focus is in the lung, and the glandular involvement is secondary. In discussing sources and routes of infection the author quotes freely from the writings of various observers. He calls attention to the fact that bovine infection cannot be

differentiated from human infection, either by localization or character of the lesion. The theory of infection through the alimentary tract is well established. Referring to the relative importance of bovine and human sources he summarizes as follows: "Pathologists who have studied the question carefully now agree that about eleven-twelfths of all tuberculosis in man is caused by human bacilli and about one-twelfth by bovine bacilli; and that bovine infection, as it occurs, predominates in childhood, while the human infection, although accountable for a large per cent of disease during childhood is accountable for nearly all disease in adult life."

The author refers to the interesting work of Jacobs, who made studies on children of German families where there had been no open cases of tuberculosis, examining into the conditions of 620 houses in which there lived children who showed positive reactions. He found that 61 per cent of these houses had never sheltered a person suffering from tuberculosis. In villages where there had never been a case of tuberculosis, in children not going to school in these villages he found that from 30 to 40 per cent of such children were infected. He excludes milk as being the chief factor, for in these districts the children are mostly breastfed during the entire period of the first two years of life. He found tubercle bacilli on the legs of 31 per cent of house flies examined in these peasant houses. These studies suggest that there are many ways probably of carrying infection to the child other than directly from the tuberculous adult in direct contact in the home. Intimate, prolonged association, however, provides opportunity for massive infection. The early period of life with its absence of specific cell-defense offers a fairly easy entrance for bacilli, while the period after this specific defense has been established is one of increased resistance. Infections from without in later life are probably rare. In other words, tuberculous disease in adults is most probably largely a result of an infection from within the patient's own body, and not a new implantation of bacilli from without. Immunity is relative, and it is important to develop it to such a high degree that it cannot be overcome in case bacilli should gain access to the tissues in sufficient numbers and be held in situ sufficiently long.

In a chapter on pathological changes, the author deals most interestingly with localization; the effect of cell-sensitization upon the implantation of bacilli; the various methods of metastasis; and the different forms of the disease and various organs affected. He offers an anatomical and physiological explanation for the fact that the apex of the lung in the adult is predisposed to infection; and he discusses at length the theories of Freund, Schmorl, and Rothschild. He explains the small heart in tuberculosis on a physiological basis. He observes that nearly every adult who suffers from clinical tuberculosis has a more or less pronounced neurasthenia, and he discusses the nervous system in tuberculosis in an interesting manner, emphasizing the fact that toxins and depressive emotional states act centrally causing a general irritability of the central cells. He discusses at length the circulatory system in this disease, and the various disturbances in digestive function and the pathological changes in the digestive system occurring in tuberculosis. In a chapter on the anatomical relations of organs within the thorax and their relation

to the soft structures forming the surfaces of the thorax with many excellent illustrations, he brings out clearly and in most satisfying detail the important essentials in this regard. It has not been the reviewer's pleasure to find in any other writings so complete an exposition of this important matter.

He devotes 265 pages to diagnosis, going into symptomatology, physical signs, diagnostic tuberculin, x-ray, and other means.

A complete chapter on laboratory methods is given by Dr. J. E. Pottenger.

Under "Complications and Treatment" the author takes up laryngitis, enteritis, pleuritis, pneumothorax, meningitis, and other non-pulmonary tuberculous conditions. Fever in tuberculosis is treated exhaustively with free quotations from Vaughn and with many charts. He takes up climate and the various elements in routine treatment. He dwells upon the importance of medical supervision of the patient, and compares home treatment with sanatorium treatment. He devotes sixty pages to a discussion of tuberculin therapy; heliotherapy, hydrotherapy and psychotherapy come in for a valuable chapter each; and prognosis, prophylaxis, anaphylaxis, and artificial pneumothorax are not overlooked. He is not enthusiastic over artificial pneumothorax, referring to it as "only a makeshift." He points out that practically in all cases that are suitable for this treatment the compression of one lung places an added burden on the other lung, and while one lung may be put at rest the additional activity of the other may be a danger.

At the end of the work one hundred and forty pages are devoted to a detailed review of cases, with charts and chest diagrams.

The author has succeeded in a most admirable and satisfying manner in his effort to make these volumes a complete, exhaustive, and up-to-date work on the subject of tuberculosis.

—MARCLEY.

CONSTIPATION, OBSTIPATION AND INTESTINAL STASIS.

By Samuel Goodwin Gant, M.D., LL.D., Professor of Diseases of the Colon, Sigmoid Flexure, Rectum, and Anus in the New York Post-Graduate Medical School and Hospital. Second edition, enlarged. Octavo of 584 pages, with 258 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, \$6.00 net; half morocco, \$7.50 net.

Dr. Gant's contribution to medical literature has one salient point above the majority of authors; he is original. His concise and epigrammatic style reminds the reviewer of the late Dr. Scudder's work on the Practice of Medicine.

The second edition of Dr. Gant's work has been rewritten to a great extent, and a number of illustrations have been added, which are among the finest examples of illustrative art in America.

Dr. Gant has been converted to the Froudian school of psycho-analysis and treatment, which means that he has come to Virchow's conclusion, that there are disturbances of the human body which profoundly affect the individual, and which cannot be demonstrated by laboratory methods. In this respect his views are almost identical with those now held by James Mackenzie.

It is the reviewer's opinion that physicians who are

both trained in the older methods and are abreast of the times in the newer ones, where both objective and subjective symptoms are our main guide in forming a diagnosis, will make fewer misses in a stated number of cases than the laboratory physician with his more modern methods of examination.

Dr. Gant lays especial stress on the mental attitude of the patient, and on the foundation of faith; faith in the physician and faith on the part of the patient are indispensable adjuncts in the cure of a large number of cases, especially of neurotics. He states that "it is of the utmost importance to alleviate the mental distress, and correct the faulty impressions (errors of belief) as far as feasible, by suggestion and encouragement."

The author recognizes the evident fact that sensitization of brain cells, be it for evil or for good, biochemical action, profoundly affects the cellular structures of the body.

Neurosis is a combination of biologic, physical, and psychic forces producing physical as well as mental changes in the animal organism we call the body, recognizing autogenous pathological vulnerability to suggestion as causative factors in disease.

Constipation in the young is traceable, to a great degree, to neurotic impressions and self-analysis, but the greater number of cases are traceable to laziness, early drug habits, and finally a mental state where the individual's thoughts are centered on the alimentary tract. Will power, supplemented by the physician's suggestions, based on faith, will cure a majority of these cases.

Hydrotherapy is also emphasized. It is a well-known fact that the average woman drinks only thirty ounces of water daily, while the normal urinary secretion ought to be in the neighborhood of forty ounces, not allowing for any waste of the water-intake by the skin, lungs, and the bowels, leaving the system surcharged with toxins that have a selective and destructive action on the cells of the nervous system.

In the operative part of the work, the author puts emphasis on the part that slight irritation of the anal orifice plays on the health of the individual.

—ENGSTAD.

DISEASES OF STOMACH, INTESTINES AND PANCREAS. By Robert C. Kemp, M.D., Professor of Gastro-intestinal Diseases at the Fordham University Medical School. Third edition, revised, with 438 illustrations. Philadelphia and London: W. B. Saunders Co., 1917.

The third edition of Kemp's "Diseases of the Stomach, Intestines and Pancreas" goes more fully into some of the more recent advances in diagnostic methods, especially with reference to the Röntgen ray. The data for this section are supplied by recognized authorities, and the section is a well-condensed résumé for the general practitioner.

The discussion of intestinal stasis is particularly good, and expresses the general American opinion of Lane's work.

Routine and special examination methods are so clearly expressed as to be easily understood.

Treatment is handled in a broad way, and is based on the work of many men.

While adhering to text-book methods of including considerable that is immaterial, the work, as a whole, is a valuable addition to the physician's library.

—WILLSON.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

W. A. JONES, M.D., EDITOR

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K. O. KLEIN, Associate Publisher

Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

JUNE 15, 1917

THE MEETING OF THE A. M. A.

The American Medical Association meeting in New York during the first week of June showed a registration of about fifty-four hundred, seventy of whom came from Minnesota. Of course, the larger registration came from the State of New York. The meetings were held on various hotel roof-gardens, and the House of Delegates met at the New York Academy of Medicine. On account of clinical sessions, the general Section meetings began Wednesday morning. The open meeting was held in the Waldorf-Astoria ball-room and, was, as usual, crowded with doctors and their friends to hear the principal speakers of the week. The patriotic rally took place at the Hippodrome on Thursday night, the chief speakers being Ex-President Roosevelt, President George E. Vincent, and Dr. C. H. Mayo, the President of the Association. The addresses were interspersed with music and patriotic exercises.

On Monday before the opening meeting the American Academy of Medicine held their session at the Biltmore Hotel. Although not a part of the American Medical Association it

is an adjunct mainly for the study of medico-sociological problems.

The clinics during the fore part of the week were held at various hospitals within the city, in the suburbs, and throughout the adjoining portions of the state easily reached by train from New York. Unfortunately, the men who attend the meetings of the American Medical Association are, as a rule, busy doctors, and many of them did not feel like spending their time in the clinics; however, a few were very well attended. A regrettable circumstance was a clinic prepared by an orthopedist and a general surgeon at the Fordham Hospital, but no physicians appeared at the clinic. This was simply illustrative of the indifference or the weariness of the attending surgeons, or was due to the multiplicity of clinics and the inability to attend clinics at distant points. At the Montefiore Home, a wonderfully beautiful hospital home for chronic diseases, the clinic was of unusual interest. This home contained, in all probability, a large number of neurological cases exceedingly rare and almost unknown to the general profession. This clinic was very well attended. Some of the clinics in the downtown hospitals were attended by friends of the operating surgeons, and reminded one of student days when the operator and his assistants surrounded the patient almost to the exclusion of the sight-seer.

The House of Delegates met at the New York Academy of Medicine for the transaction of its business, and when the report is made and the proceedings published there will doubtless be much of interest to read. The report of the Committee on Sessions and Section Meetings aroused a great deal of antagonism in several Sections, for instance, the suggestion to reduce the number of units in the Sections on Diseases of Children, Nervous and Mental Diseases, Public Health, Stomatology, and others from six to three units. It is quite natural that each Section felt that its work was of prime importance, and the reduction of units was vehemently opposed, but won out. The Section on Diseases of Children adjourned for an hour to attend personally and protest against the effort to reduce the number of its units. The idea of the Committee was evidently to limit the number of papers presented, in order that the *Journal of the A. M. A.* might publish a lesser number of papers in the various Sections, and thereby have space for the publication of papers read at other meetings.

MAN TO BLAME FOR HIS OWN ILLS

Dr. J. N. Hurty, State Health Commissioner of Indiana, said before the Section on Preventive Medicine and Public Health that we were taught from childhood to be sick, and suggested that the present civilized man is a chump to do many things to make himself weak and sick. "To make sure of sickness and weakness he begins in infancy. He will not give his children enough air, he will not take care of his children's teeth, he gives his baby soothing sirup, he deforms his child's body with ill-fitting seats at school, he supplies his child polluted drinking-water, and when the innocent child dies of typhoid he rolls his eyes towards Heaven and says, 'the Lord has taken away.'" Dr. Hurty contended that every school of five hundred children should have an all-day special medical supervisor, but such a thing did not exist in the United States.

These statements may be more or less exaggerated, but, in the main, they are true, and Dr. Hurty emphasized them only to call attention to the necessity of proper bringing up the child, following him through his school years and making him a healthy man. To look at the progressive side of preventive medicine one may safely say that much has been done in the past two years to start the child right. Various visiting nurses' associations, school-inspectors, and local and state boards of health have done much to improve present conditions, but there is still the same amount of apathy towards preventive medicine as there is towards enlistment. The efforts of corporations and industries have been to safeguard their employees, and much has been done in this direction by all large incorporated bodies. Sanitation from all sides has made it possible for the working classes to be cared for, safeguarded, and their health kept up to a reasonable standard with the result that their work is better done, and they accomplish more because they are more physically fit. Occupational diseases are receiving more attention. Safety devices in machinery prevent the loss of limbs and life. The ventilation of workshops to carry off dust and fumes has increased marvelously. In fact, all of the public-health measures are being gradually employed to increase efficiency and to maintain public health.

Right here it may be said that the various

Sections and the American Medical Association in general are for prohibition, and that alcohol is useful only in the arts and sciences, has no place as a food, and is useless as a medicinal agent. In speaking of prohibition, Dr. Mayo suggested that the physician's prescription for alcohol be thrown into the waste-paper basket. This may be an overstatement of the use of alcohol, but it will have a very definite effect, and will gradually put the physician in the right light towards the use of alcohol as a stimulant. Whether this country shall adopt nation-wide prohibition or not, is a grave question for the Government at Washington. Other countries have instituted it, but the majority of the countries have regulated it, which on the whole is perhaps safer than the prohibition which does not prohibit. In all events, the American Medical Association, representing as it does the majority of physicians in the United States, is on the right side of the question. Not only should the physician be a leader in the community, but he should have a very wide-angled vision in social disorders. Dr. Geier said that "medical care in industry is not a charity; it pays good dividends." This statement applies as well to the care of the new-born, the child, and the young man as to the adult.

In order that these various medicosocial problems should be carried out properly there is an increasing demand that a physician be a member of the President's Cabinet. No harm can possibly come from a new official of this character, and undoubtedly the correlated results of government supervision through the Cabinet would be of great assistance.

 WAR SERVICE

Throughout the entire meeting of the A. M. A. there was the same spirit, the same war talk, and the same pleading that are so in evidence throughout the country. Particular efforts were made to induce medical men to offer their services. Dr. Franklin H. Martin, of Chicago, in an address, roundly scored the medical men for not volunteering for medical service. Dr. Martin, who is Chairman of the Medical Section of the Council on National Defense, has spent much time in Washington recently. He was in Washington at the time of the visit of the French and English Commissions, and unhesitatingly promised

that the United States would send ten thousand doctors to the front. His promise seemed perfectly justifiable, but the call did not meet with the response that was expected. It is quite evident from what we know at the present time that more than ten thousand doctors will be needed; and, although a total of twenty-one thousand experienced physicians and nine thousand men graduated from medical colleges in 1913, 1914, and 1915, had been asked to come in and help the Government, Dr. Martin received only eight thousand replies, and only three thousand men have accepted the invitation. The probabilities are that, unless more physicians volunteer, many will be drafted into the Government service, and the result will be that many of the young medical men will be sent to the front as privates and may be occupied with the vigorous exercise of digging trenches.

Dr. Martin stated that England was practically without doctors at home, or, at best, had only one doctor for every sixteen thousand population. France is as badly off, and the Hospital Units that have gone to France and are in active service make a comparatively small showing. However, Dr. Martin urges that at least two hundred doctors and sufficient nurses and orderlies be sent to the front each month, and in that way they may be able to assist in service.

Colonel T. H. Goodwin, Great Britain's ranking medical officer, was one of the speakers before the Section on Preventive Medicine and Public Health, and he emphasized the urgent need of medical men on the front, and cited the necessity that during an active engagement there may be from 20,000 to 30,000 wounded in the space of twenty-four hours, and he asked if we are going to leave the wounded on the firing zone or are we going to get them back out of the fire. This means that medical men must be up behind the firing-line, in order to save those who, if neglected, would die of their wounds. If the wounded are looked after properly the probability is that many of them will return to the front for future fighting. THE JOURNAL-LANCET has no fear that the doctors will not respond. They may be a little slow about it, but they will wake up to the very serious situation.

Dr. Goodwin said that he was in charge of a base hospital for eighteen months, and

in that time 55,000 patients passed through the hospital. If the service at the front is to be maintained it will mean that those who are left home will have to do the work of three or four men; consequently, the older men will have to quadruple their efforts in order to keep the immediate and surrounding population attended to. Hospitals, dispensaries, and medical schools will be seriously handicapped, but, in all probability, those who remain behind will be able by working harder than usual to keep these institutions in running order. Every one who talked on the war situation urged medical students to continue to pursue their studies, and not to desert the schools in their enthusiasm or for adventure. What are we going to do about it?

PRESIDENT CHARLES H. MAYO

Dr. Charles H. Mayo outdid himself in his presidential address to the American Medical Association. Physicians who had never seen Dr. Mayo or heard him speak—there must be few such in this country—were very enthusiastic over his address, as he created a tremendous impression, for he spoke with his usual conviction and the force demanded by the occasion. Ordinarily, he is quiet and retiring in manner, but no one who heard him the other night will think of him in any other way except as a very earnest and forceful speaker. His telling epigram that "tongue-control will do this nation more good than birth-control" had a very significant meaning. Evidently, there has been too much talking and too little action from his point of view, and he repeatedly urged his hearers to do their part as medical men at the front. He criticized the retardation which is quite evident and said: "This has been a country of the development of the individual; the efficiency of a nation needs a crisis to bring it about. That crisis is here. We have been building monuments for those who have excelled in the accomplishments of soft peace; now we are going to build some more monuments to soldiers. The greatest advances of the world's history have been associated with war."

He was quite in sympathy with the efforts of revision in the education of the country. He said Flexner is right when he tries to bring about a change in the present system of education founded in the monks' age of civilization, and he suggested that much of

the new thought of the world may come from the Siberian mines after the next two generations. He referred to the scientific accomplishments of America, comparing them favorably with what any other country has done, and he asserted that many medical discoveries had been made in this country, but had not received proper recognition until they had passed through other countries and received their stamp of approval. This is altogether wrong. He cited the work of Surgeon-General Blue, Braisted, and Gorgas, and said that, through their influence and through the work that they had initiated, the American Army in Europe will be the healthiest army the world ever saw.

FOOD SHORTAGE: AN APPEAL TO PHYSICIANS

Under the above caption Mr. J. Ogden Armour, head of the greatest food dispensers in the world, makes an appeal to the physicians of America to teach the public *real* conservation of food by teaching them food *values*.

Mr. Armour knows the food conditions in the world better than any other man, and his warning and appeal must not fall on deaf ears. He is a dispenser of meats, and his appeal means, in short, to eat less meat; and he asks physicians to educate the people on the caloric value of foods. His appeal is highly creditable to him as a man, and it also shows his appreciation of the medical profession in its recognition of both their ability and their willingness to do, not a "little bit," but a very great bit in the world's crisis.

REPORTS OF SOCIETIES

THE MINNESOTA NEUROLOGICAL SOCIETY

The Society met on March 20, 1917, at the Town and Country Club, St. Paul, and the following papers were presented:

"Differential Diagnosis of Some Forms of Epilepsy, Hysteria, and Chronic Tetany," by Dr. J. C. Michael; "Some Pathological Findings in a Case of Familial Muscular Atrophy," by Dr. A. S. Hamilton; "Report of a Case of Brachial Plexus Injury," by Dr. A. W. Morrison; and "The Relation of Sensory Nerves to Inflammation," by Dr. F. H. Scott.

At the meeting of May 15, held at the same place, the following papers were presented:

"Report of Two Cases of Dyspituitarism: One hyper- and one hypo-function," and "A Case Report of Back Injury with Remarkable Reflexes," by Dr. L. M. Crafts; "Clinical Report of Two Cases of Cerebellar Cyst," and "A Case Report of Laminectomy," by Dr. C. R. Ball; "Brain Changes in Pernicious Anemia, with Demonstrations of Sections," by Dr. Woltman.

The following are résumés of the papers by Drs. Michael and Crafts:

DIFFERENTIAL DIAGNOSIS OF SOME FORMS OF EPILEPSY, HYSTERIA, AND CHRONIC TETANY

A case of Dr. Rigg's, is that of a man aged 30, farmer, single, who has never been ill except with childhood diseases. He was operated on for appendicitis five years ago. In 1907 he had a severe attack of pain in the pit of his stomach, lasting continually for two days. Later in the same year a similar attack of pain with cramps in the right hand, duration ten minutes, recurred. In 1909 he had a similar attack following a state of unconsciousness. This time the pain was very severe, especially in the right shoulder. In the winter of 1911-12 he had many cramp-like attacks in his hands and forearms; sometimes his neck was stiff, breathing was extremely difficult, and sudden clonic twitchings would occur during and between the spells. If he would pound hard on his chest, or if someone else would do that for him, he would often get relief.

There never was unconsciousness during one of these seizures, though he seemed to have been in a dazed, limp state several times, either before or after an attack. Sometimes, after a long series of spells, perhaps over a period of twelve hours or more, he noticed black-blue areas on the skin of the extensor surfaces of the arms and legs, about the size of a dime.

One sister, a spinster, aged 45, had a hemiplegia, probably hysterical, several years ago. Ordinary epileptic treatment did not bring much relief.

This case was presented because it suggested some features of a chronic tetany. The reflexes were active. Except for a slight tenderness present over an area a little below McBurney's point and over a corresponding region on the left side, examination revealed nothing. Neither Trousseau's nor Erb's phenomena could be demonstrated. Cells in the blood were normal; teeth showed no abnormalities. It has so far been impossible, however, to see the patient during an attack. Pseudotetany, which Westphal maintains may have all the earmarks of a genuine tetany, except Erb's phenomena, was strongly considered.

A definite diagnosis was postponed until the opportunity for a complete examination of the patient during one of the acute stages should be afforded.

DYSPITUITARISM

Dorothy F., aged 15. Family history, somewhat neurotic. She was a plump baby. Had marasmus from fourth to tenth month; then became overfleshy, and always remained so. Matured at 10. Markedly overdeveloped physically. At nine and a half she had attacks of extreme head-pain, often at night, vomiting

with them. Her sight began to fail about a month after the first pain. The oculist reported optic neuritis. Her condition remained almost stationary for about five years, and she had very little headache. In October last she had another attack of extreme head-pain, with some delirium and vomiting, which lasted a week. Vision diminished. In early January she had frequent headaches of moderate severity. In the middle of January she had an extreme attack of pain, and vomiting, with further reduction of vision, and some mental confusion. She had an extreme attack of pain and vomiting, with two convulsions and vomiting. Vision was practically extinguished and there was numbness in the face and teeth. She lost about twenty-four pounds.

She was a blue baby at birth, and one foot was deformed. She is overdeveloped physically, has large busts, and appears older than she is. She is about four feet five inches tall, has a peculiar placidity of manner, and a moderate rounded prominence in the mid-frontal region just above the nose. The pupils are dilated about equally, and there is no reaction. There is possibly slight light perception. There is slight loss of the labionasal fold on the right. Movement of face muscles and tongue is free. Face reflexes are negative. Arm reflexes are absent, except slight response at the right triceps. The hands are round, and fingers tapering. No patellar response on left; slight on right. Tendo Achillis absent. Slight tendency to a Babinski response, right. No ataxia. Pulse 130; pressure 123 systolic. X-ray plates of skull showed a wide and deeply excavated sella. X-ray of hands showed early union of epiphyses and broadening of the phalanges.

Diagnosis, pituitary tumor.

Operation advised, but not accepted. About a month later, convulsions, unconsciousness, transitory paralyses, and death followed. Autopsy by Dr. E. T. Bell showed glioma the size of an English walnut occupying the sella turcica.

Jessie T., aged 17. Single. Some members of family have been quite small. Was always a plump child; graduated from the 8th grade at 15. At 10 she had attack of headaches and vomiting, apparently projectile; lost a good deal of flesh, but regained it and became heavier than ever. Occasional headaches since. For the past five years she has had too free urination. Drinks about nine quarts daily. About two weeks ago she began to have more head-pain, and vomiting accompanied by nausea, but with force; slight dizziness; never any trouble with vision; noises in ears at times. She had a well-rounded figure, short in stature (4 ft. 6 inches); bright expression; placid manner. The iris shows patches of dark color; pupils negative. Has two first canine teeth still. Hands round, fingers somewhat tapering; reflexes negative; pulse 100; pressure 122 systolic; no pubic or axillary hair; sexual organs infantile. Twenty-four hour quantity of urine, 11½ quarts. X-ray plates of skull by Dr. Donaldson show sella turcica less than half its normal length. Hands show delayed union of epiphyses and broadening of the phalanges.

E. M. HAMMES, M. D.,

Secretary.

BROWN-REDWOOD COUNTY SOCIETY

The Society held its annual meeting on May 26 at New Ulm with a fair attendance.

Dr. L. G. Rowntree, of the Medical School of

the University, presented a paper on "Diabetes;" and Dr. O. C. Strickler, of New Ulm, presented a case of "Supertension."

A resolution was adopted asking the University Medical School to have a practitioner's day or week for the benefit of the practitioners throughout the state.

A motion was adopted endorsing the University Hospital's proposed plan to receive pay-patients.

The following officers were elected: President, Dr. F. D. Gray; vice-president, Dr. O. J. Seifert; secretary-treasurer, Dr. G. F. Reineke; delegate, Dr. J. Rothenberg; alternate, Dr. T. Hammermeister.

G. F. REINEKE, M. D.,

Secretary.

SOUTHERN MINNESOTA ASSOCIATION

The mid-summer meeting of the Association will be held at Faribault on July 23 and 24, 1917. The preliminary outline of the program is as follows:

"Unusual Fractures and Dislocations, and Technic in Handling Them," by Dr. C. W. Hopkins, Chief Surgeon, C. & N. W. Ry. Co., Chicago, Ill.; "Some Surgical Considerations of the Spleen," by Dr. D. C. Balfour, Rochester; "The Tuberculosis Situation in Minnesota," by Dr. H. M. Bracken, St. Paul; "Gangrene: Its Pathology and Treatment," by Dr. J. F. Corbett, Minneapolis; "Skin Grafting," by Dr. G. R. Curran, Mankato; "Traumatic Brain Lesions," by Dr. E. M. Hammes, St. Paul; "Surgical Treatment of Infantile Paralysis," by Dr. M. S. Henderson, Rochester; "Epidemic Cerebrospinal Meningitis," by Dr. M. Seham, Minneapolis; "Differential Diagnosis Between Anterior Poliomyelitis, Epidemic Cerebrospinal Meningitis and Tubercular Meningitis," by Dr. C. C. Pratt, Mankato; "Types of Diathesis in Children, and Their Relation to Diet," by Dr. F. W. Schlutz, Minneapolis; "Harelip and Cleft Palate," by Dr. G. B. New, Rochester.

A. E. SOHMER, M. D.,

Chairman, Program Committee.

OLMSTED COUNTY SOCIETY

A meeting of the Society was held May 23 in Rochester. Supper was served to the members at the Commercial Club at 6:45, after which the scientific program was given at the Mayo Clinic Assembly room at 8:00 P. M. There was an attendance of approximately one hundred.

A resolution was adopted unqualifiedly en-

dorsing the proposed milk ordinance for the city of Rochester. A vote was taken in favor of establishing a county tubercular sanitarium. It was also voted to invite the citizens of Rochester to a combined meeting of the Olmsted County Medical Society in order to discuss the milk and tuberculosis.

A resolution was passed urging the abrogation by Congress of the patent rights on salvarsan.

A resolution extending the sympathy of the Society to the members of the Stinchfield family was passed.

It was voted to continue the Society's membership in the Minnesota Public Health Association.

Dr. A. J. Chesley, Director of the State Board of Health, gave a very interesting talk on poliomyelitis, which was discussed by Drs. Crew, Wilson, Rosenow, Sheldon, and Henderson.

Dr. Carleton Dederer demonstrated "Renal Autotransplant to Cervical Region in the Dog, with Bilateral Nephrectomy."

H. W. MEYERDING, M. D.,
Secretary.

WABASHA COUNTY SOCIETY

By direction of Dr. A. A. Law, chairman State Committee of National Defense, and upon request of five members, a special meeting of the Society was called by the President, and held in the City Hall at Lake City, Minn., Thursday, May 17, 1917, for the purpose of considering matters relating to national defense, preparedness, and medical mobilization.

The "Information" circular relating to appointments in the Medical Reserve Corps of the Army was read, and application-blanks were given out to some of the members present.

In all, four members of the Society stated they either had or were intending to fill out and return the application-blank for appointment in the Medical Officers' Reserve Corps, and their names were forwarded to Lieut. Hugh McGaughey, Winona, member State Committee of National Preparedness.

By direction of the State Committee, the President appointed a committee of five from the Society to be known as "The Auxiliary Medical Defense Committee of Wabasha County," as follows: Dr. W. B. Heagerty, Mazeppa; Dr. D. S. Fleischhauer, Wabasha; Dr. W. F. Bleifuss, Elgin; Dr. E. H. Bayley, Lake City; and Dr. W. W. Nauth, Minneiska.

W. F. WILSON, M. D.,
Secretary.

NEWS ITEMS

Dr. P. E. Stangl, of St. Cloud, has left for Fort Riley, Kas.

Dr. C. A. Wicklund has moved from Churchs Ferry, N. D., to Alamo, N. D.

A base hospital with 500 beds and a staff of 196 is planned for Aberdeen, S. D.

Dr. Arthur D. Bevan, of Chicago, was elected president of the A. A. M. at its New York meeting.

Dr. Carl Robertson, of Litchfield, has been appointed naval surgeon, and has left to report for duty.

Dr. S. E. Howard, of Slayton, has moved to Minneapolis to practice in eye, ear, nose, and throat work.

The annual meeting of the Montana State Medical Association will be held on July 11 and 12 at Kalispell.

An addition of five stories is to be made to the building of the Minneapolis City Hospital, at a cost of \$80,000.

Dr. W. G. Workman, of Tracy, first lieutenant in the Medical Reserve, has been ordered to Fort Riley, Kas.

Dr. H. B. Zimmermann, of St. Paul, has been made executive officer in charge of the hospital at Fort Snelling.

Dr. Frank C. Corbett, of the University of Minnesota, has been promoted to major in the Medical Reserve Service.

Seven nurses were graduated at the graduation exercises for the class of 1917 at the Immanuel Hospital at Mankato.

Dr. E. S. Geist, of Minneapolis, attended the annual meeting of the American Orthopedic Association in Pittsburgh.

Dr. J. C. Staley, of St. Paul, having served a year in France, has joined the Medical Reserve Corps and left for Fort Riley, Kas.

The Minnesota State Board of Health is ready to make a strenuous campaign against the epidemic of infantile paralysis in the state.

The largest class ever graduated from the St. Paul City and County Hospital received their diplomas May 24. The class numbered thirty-nine nurses.

The recent graduating class of Asbury Hos-

pital's Training-School, Minneapolis, numbered twenty-two. Several of the class will join the Red Cross.

The emergency attachment of ten nurses of the Minneapolis branch of the American Red Cross has been ordered to prepare for immediate service in France.

Dr. F. J. Patton, of Duluth, has been appointed surgeon of the U. S. S. Baron de Kalb, one of the interned German steamers taken over by the U. S. Government.

Miss Lydia H. Keller, who has been acting superintendent of Asbury Hospital, of Minneapolis, has tendered her resignation. Her successor has not been chosen.

Army medical schools at which doctors will be trained for service will be opened at Fort Riley, Kas.; Fort Benjamin Harrison, Ind.; Fort Ogelthorpe, Ga.; and possibly at Leon Springs, Tex.

Over thirty students have taken the two-year preparatory medical work in the School of Medicine of North Dakota the past year; and there have been over fifty doing pre-medical work.

Dr. W. A. Jones, editor of THE JOURNAL-LANCET, was elected a member of the American Neurological Association, being one of four selected out of twelve names presented at the Association's annual meeting in Boston last week.

Dr. Wallace Cole, of St. Paul, former captain of Battery A, First Minnesota Field Artillery, has accepted a commission as captain in the Medical Reserve, and sailed last week for England for orthopedic service in English hospitals.

Dr. Charles H. Mayo's presidential address before the American Medical Association at its annual meeting in New York attracted marked attention throughout the country; and all said that Dr. Mayo made an admirable presiding officer.

At the annual meeting of the South Dakota State Medical Association, held on May 29 and 30, the following officers were elected: President, Dr. H. J. G. Koobs, Scotland; first vice-president, Dr. D. L. Scanlon, Volga; second vice-president, Dr. H. T. Kenney, Pierre; secretary, Dr. R. D. Alway, Aberdeen.

Dr. Lloyd Dack, a graduate of the Medical School of the University of Minnesota and a recent interne at the Minneapolis City Hos-

pital, was married on June 15 to Miss Mabel Brauer, of Northfield. Dr. Dack has taken over the practice of Dr. R. T. Glyer, of Broosten, the latter having joined the Medical Reserve.

Drs. Frank C. Todd, of Minneapolis, and Frank E. Burch, of St. Paul, have each given \$2,250 for fellowships in ophthalmology and otolaryngology in the University Medical School. Such a fellowship gives a student in these studies \$500 for the first year, \$750 for the second year, and \$1,000 for the third year of graduate work.

The prejudice of juries against physicians is illustrated in a recent suit at Willmar. A man had his arm injured in a motor accident, and was attended by Dr. B. J. Branton. The man refused to continue treatment, had a bad result from the fracture, sued the doctor, and got a verdict of \$4,500. The Supreme Court promptly set the verdict aside.

Dr. A. J. Kirghis, of St. Cloud, died on May 31, from consumption contracted in the trenches while in the French hospital service. Early in the war, Dr. Kirghis volunteered for service, and spent several months in France. Dr. Kirghis was born in Lyons, France, in 1876, and had studied in Harvard and other American schools, as well as in France. He was a highly accomplished gentleman.

Dr. J. E. Haugen, manager of the St. Paul Lutheran Hospital, has been elected president of the St. Paul Hospital Council, consisting of the following hospitals: St. Paul City and County; St. Paul Norwegian Lutheran; St. John's German Lutheran; Bethesda Swedish Lutheran; Mounds Park Swedish Baptist; St. Luke's Episcopal; St. Joseph's Catholic; Midway General; Cobb; and the Pokegama Sanatorium.

IMPORTANT NOTICE

Dr. Franklin Martin of the Council of National Defense wired Dr. A. A. Law on Tuesday that he was bringing Colonel T. H. Goodwin of the British Army Medical Corps to Minneapolis from Washington on Saturday, June 16th.

Colonel Goodwin came to this country with Mr. Balfour and at the request of our Government was detailed on the staff of Surgeon-General Gorgas as one of his attendants. Colonel Goodwin was in command of an ambulance detachment at the retreat of the British army from

the Marne. He recently told the story of this retreat to an audience of doctors in Chicago, some of whom said that it was a wonderful tale, modestly told without any attempt at oratory, yet at one moment he moved his audience to tears and the next to cheers. Colonel Goodwin is coming to Minnesota to talk to medical men and their wives. The entire profession of the state of Minnesota with their wives are invited to hear the talk of the British Colonel on Saturday night, June 16th, at 8 o'clock at the Church of the Redeemer, Minneapolis.

PHYSICIANS WANTED

The demand for physicians as assistants and to take charge of practices during the absence of well-established physicians, is unprecedented. Many of these openings will lead to permanent partnerships. Recent graduates, internes, and others desiring such positions can readily obtain them through this office. Address THE PUBLISHER OF THE JOURNAL-LANCET.

MEDICAL PRACTICE IN MINNESOTA WANTED

Might consider good partnership. Give details. Strictly confidential. Address 517, care of this office.

APPARATUS WANTED

Betz entire body (reclining kind) hot-air apparatus or electrical body apparatus. Address 499, care of this office.

EQUIPMENT FOR SALE

An x-ray outfit, consisting of table, tubes, etc., capable of doing heavy work, for sale cheap. Address 512, care of this office.

PHYSICIAN IN HOSPITAL WANTED

Position as resident house doctor open. Salary \$1,000.00 a year. Send applications to Board of Trustees, St. Paul Hospital, St. Paul, Minn.

PHYSICIAN WANTED

Wanted in a thrifty German town and community a physician and druggist to go in business. Good chance for physicians and druggists who are looking for a splendid location. Address 513, care of this office.

PRACTICE FOR SALE

I wish to sell my practice in northern Minnesota in a town of 900 in a rich farming and dairying country. Will sell part or all of equipment, with real estate optional. Address 510, care of this office.

OFFICE POSITION WANTED

A young lady with no experience, but with a pleasing personality and the ability to take charge of an office containing a number of physicians, wishes a place in Minneapolis. Address 508, care of this office.

LOCUM TENENCY WANTED

I desire to take a place as locum tenens for four or five weeks this summer. Have had seven years' experience in hospital work and general practice. Address 518, care of this office.

POSITION AS MATRON OR ASSISTANT MATRON IN A HOSPITAL WANTED

By a thoroughly competent woman who has had a number of years' experience in a large institution, and can give best of references. Speaks English, German, and French. Address 516, care of this office.

PRACTICE WANTED

Am graduate of Bellevue Hospital Medical College with hospital experience in New York and Minnesota. Want to purchase a practice in a small town or associate to a physician with a well-established practice. Address 511, care of this office.

PRACTICE FOR SALE

In Western Minnesota in town of 550. Country thickly settled; territory quite large; nationality, Scandinavian and German; religion, Protestant. Practice amounts to \$2,500 to \$3,000 a year. Collections good. Price \$500 for office equipment, drugs, and instruments. Address 515, care of this office.

FOR RENT—FULLY EQUIPPED OFFICE IN METROPOLITAN BANK BUILDING, MINNEAPOLIS

Two physicians will share their splendid suite of offices in the above-named building with a third physician—internalist preferred. Address 507, care of this office.

OFFICE FOR RENT

I desire to sublet my suite of offices (tiled-floor operating-room, consultation-room, rest-room, dark-room, and reception-room) in the Masonic Temple, Minneapolis. Will sell the fixtures for offices at a fair price. Address 502, care of this office.

PRACTICE FOR SALE

A \$5,000 unopposed practice in small town in northern Minnesota on railroad; good roads. Nearest doctors east 10 miles, west 15 miles, south 25 miles, north, very far. Equipment, \$500. \$2,000 drug stock optional. Have commission in U. S. Corps subject to being called at any time. Reasonable terms. Address 505, care of this office.

PRACTICE FOR SALE

In village of 500, forty miles from Minneapolis, in the lake district of Central Minnesota. Practice pays between three and four thousand dollars a year. 95 per cent voluntary collections. Will sell at invoice of office equipment on easy terms. Elgin roadster, optional. Reason for selling, commission in Medical Reserve, subject to call. This notice will appear but once. Address 520, care of this office.

PRACTICE OPEN

A man with good references is wanted to take my practice in a southern Minnesota village of 450 inhabitants. All modern conveniences are to be had. Good railroad facilities; rich farming community; one other physician in village; nearest town with a physician, nine miles. Terms: Sale of office equipment, but if not prepared to purchase, come anyway, as I have a good thing. No foreign language necessary. Am leaving July 1, going to larger town. Address 519, care of this office.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polio-myelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Ada	1,553	1,432	0															
Albert Lea	4,500	6,192	10			1										1		1
Alexandria	2,681	3,001	4	1														
Anoka	2,769	3,972	7															
Austin	5,474	6,960	7															1
Barnesville	1,326	1,352	1															
Bemidji	2,183	5,099	12			1												1
Benson	1,525	1,677	2															
Blue Earth	2,900	2,319	0															
Brainerd	1,524	8,526	17	1		4					1							1
Breckenridge	1,282	1,840	0															
Canby	1,100	1,528	2															
Cannon Falls	1,239	1,385	2															
Chaska	2,165	2,050	1															
Chatfield	1,426	1,226	1															
Cloquet	3,074	7,031	7			2												
Crookston	5,359	7,559	12	1		1												1
Dawson	962	1,318	3			1												2
Detroit	2,060	2,807	2															
Duluth	52,968	78,466	113	6	5	25	0	0	0	1	0	0	1	0	0	6	0	12
East Grand Forks	2,077	2,533	2															
Ely	3,572	3,572	3															1
Eveleth	2,752	7,036	6			3					1							
Fairmont	3,440	2,958	1															
Faribault	7,868	9,001	13			1												
Fergus Falls	6,072	6,887	4											1				
Glencoe	1,788	1,788	4															
Glenwood	1,116	2,161	2															
Granite Falls	1,454	1,454	2															
Hastings	3,811	3,983	7															
Hutchinson	2,495	2,363	5							1								
International Falls		1,487	6															
Jordan	1,270	1,151	2															
Lake City	3,142	3,142	7	1														1
Le Sueur	1,937	1,755	3	1														
Little Falls	5,774	6,078	6															2
Luverne	2,223	2,540	2															
Madison	1,336	1,811	1															
Mankato	10,559	10,365	18			1												1
Marshall	2,088	2,152	4															
Melrose	2,591	2,591	1															
Minneapolis	202,718	301,408	409	41	7	56	9	2	0	0	1	0	19	3	7	28	2	19
Montevideo	2,146	3,056	2			1												
Montgomery	979	1,267	2															
Moorhead	3,730	4,840	6	1														
Morris	1,934	1,685	3															
New Prague	1,228	1,551	1															
New Ulm	5,403	5,648	10															
Northfield	3,210	3,215	7			1								1	2			
Ortonville	1,247	1,774	4			1									1			
Owatonna	5,561	5,658	4															
Pipestone	2,536	2,475	0															
Red Lake Falls	1,666	1,666	6															
Red Wing	7,525	9,048	11			1												
Redwood Falls	1,661	1,666	4															
Renville	1,075	1,182	2															
Rochester	6,843	7,844	45			1					1							
Rushford	1,100	1,011	0															
St. Charles	1,304	1,159	2															
St. Cloud	8,663	10,600	10	1		2												
St. James	2,102	2,102	2															
St. Paul	163,632	214,744	262	29	7	27	1	0	0	0	0	0	5	2	4	15	4	13
St. Peter	4,302	4,176	4															
Sauk Centre	2,154	2,154	2															
Shakopee	2,046	2,302	6	1														1
Sleepy Eye	2,046	2,247	3															
South St. Paul	2,322	4,510	3			1				1								
Staples	1,504	2,558	2							1								
Stillwater	12,318	10,198	12			3												
Thief River Falls	1,819	3,174	5															
Tower	1,111	1,111	0															
Tracy	1,911	1,826	4															
Two Harbors	3,278	4,990	9	1	1					1								
Virginia	2,962	10,473	18	3		5												
Wabasha	2,622	2,622	3	1		1												2
Warren	1,276	1,613	0			1												
Waseca	3,103	3,054	0															
Waterville	1,260	1,273	1															
West St. Paul	1,830	2,660	4															
Willmar	3,409	4,135	7															
Winona	19,714	18,583	34	3		4												
Winthrop	813	1,043	2			1												
Worthington	2,386	2,385	4															

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	1														1	
Aitkin	1,719	1,633	0															
Akeley			1														1	
Appleton	1,184	1,221	1															
Belle Plaine	1,121	1,204	2		1													
Biwabik		1,690	1															
Bovey		1,377	*															
Browns Valley	721	1,058	2			1												
Buffalo	1,040	1,227	2															
Caledonia	1,175	1,372	0															
Cass Lake	546	2,011	2															
Chisholm		7,684	6		1												1	
Coleraine		1,613	1			1												
Delano	967	1,031	3		1			1										
Farmington	733	1,024	1															
Fosston	864	1,055	2															
Frazee	1,000	1,645	1															
Grand Rapids	1,428	2,239	4	1		1												1
Hibbing	2,481	8,832	6			2												
Jackson	1,756	1,907	3			1												
Janesville	1,254	1,173	2			1												1
Kenyon	1,202	1,237	0															
Lake Crystal	1,215	1,638	1															
Litchfield	2,280	2,333	2												1			
Long Prairie	1,385	1,250	0														1	
Madelia	1,272	1,273	3															
Milaca	1,204	1,102	0															
Mountain Lake	959	1,081	3														1	
Nashwauk		2,080	1															1
North Mankato	939	1,279	0															
North St. Paul	1,110	1,404	1															
Osakis	917	1,013	1															
Park Rapids	1,313	1,850	4															
Pelican Rapids	1,033	1,019	0															
Perham	1,182	1,376	1															
Pine City	993	1,258	2															
Plainview	1,038	1,175	6														1	
Preston	1,278	1,193	3															1
Princeton	1,319	1,555	0															
St. Louis Park	1,325	1,743	0															
Sandstone	1,189	1,818	1	1														
Sauk Rapids	1,391	1,745	1															
South Stillwater	1,422	1,343	0															
Springfield	1,511	1,482	1															
Spring Valley	1,770	1,817	2					1										
Wadena	1,520	1,820	0						1									
Wells	2,017	1,755	1															1
West Minneapolis	2,250	3,022	3															
Wheaton	1,132	1,300	0															
White Bear Lake	1,288	1,505	4			1												
Windom	1,944	1,749	2															
Winnebago City	1,816	2,555	0															
Zumbrota	1,119	1,138	0															
STATE INSTITUTIONS			3	2														
Anoka, Asylum			0															
Faribault, School for Blind			0															
Faribault, School for Deaf			0															
Faribault, School for Feeble Minded			5															
Fergus Falls, Hospital for Insane			12	1	1													
Hastings, Asylum			5		1		1											
Minneapolis, Soldiers' Home			5														1	2
Owatonna, School for Dependents			0															
Red Wing, State Training School			0															
Rochester, Hospital for Insane			13	2	1													
Sauk Centre, Home School for Girls			0															
St. Peter, Hospital for Insane			11	3														
St. Cloud, State Reformatory			0															
Stillwater, State Prison			3	1													1	
OTHER PARTS OF STATE			859	53	20	98	1	5	6	0	4	0	2	6	30	61	8	37
Total for state			2218	156	46	252	12	11	11	4	5	0	28	13	52	160	17	111

*No report received. REGISTRAR not doing his duty.

143 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

NITROGEN NARCOSIS

Messrs. Reed & Carnrick have issued, for free distribution, an instructive booklet on the above subject. The illustrations are in colors, and are very interesting.

The etiology, significance, and treatment of the subject are discussed in an interesting manner, making the booklet well worth sending for.

AMERICAN SALVARSAN AND NEOSALVARSAN

It is a genuine pleasure to know that the above invaluable remedies are to be manufactured in America by the agents of the German manufacturers, the H. A. Metz Laboratories, Inc., of New York.

This means that the American product will be identical with the German product, that the supply will be abundant, and that the prices will be moderate; and this is all the American medical profession asks.

THE ST. JAMES HOSPITAL

With a beautiful and unusually commodious building and with a location in an attractive and prosperous community, St. James Hospital could hardly fail of success, and it has not so failed, but its success has been more than financial. The institution has brought the advantages of hospital and sanatorium life to a very large number of patients who would, under ordinary circumstances, be denied such advantages. It is greatly to be hoped that such institutions will rapidly multiply in these days of prosperity in the Northwest, especially as health problems are now attracting wider attention than ever before.

STILL ROCK SPA

Still Rock Spa, at Waukesha, Wis., is one of a comparatively few sanatoriums in this country devoted to the exclusive treatment of diabetes and Bright's disease.

The hospital building has one hundred rooms, and the physician-in-chief, Dr. A. J. Hodgson, and his associate, Dr. H. P. Greeley, are specialists in these diseases, in which sanatorium treatment is quite as essential and fully as effective as sanatorium treatment of the tuberculous. The work of such institutions should be carefully studied by the profession, and they should be patronized wholly upon their merits.

Dr. Hodgson will be glad to correspond with any physician seeking information on the subject.

FISHING DAYS ARE HERE!

Fishermen are born, and they do not have to be told when fishing days are at hand. All they want to know is where to find good fishing waters. Well, we have been searching for and going to the best for over twenty years; and we always take a train on the Chicago and Northwestern Line for some point in Wisconsin if we expect to reach the very best points. Trout, bass, walled-eyed pike, and muskellunge are found in the Wisconsin lakes and streams as nowhere else accessible to the Twin Cities; and such lakes and streams! They, too, are unexcelled, and it is a joy to be upon them.

The "Fishing Folder" of the Northwestern Line is

ready for you. Just ask for it, in person or by card, of any agent of the road.

SIOMINE

Siomine is an ethical composition, with a content of 78.5 per cent iodine, offered the profession as a desirable substitute in all conditions where the iodides are indicated, especially in tertiary syphilis and in asthma, acne, chronic rheumatism, and arteriosclerosis with high blood-tension.

Its advantages over potassium iodide are especially the following: It produces no gastric disturbance; it is easily taken as it is put up in capsules, and being a solid it is administered conveniently; it is of unvarying composition, and hence always produces like results.

It is manufactured by the Howard-Holt Company, Inc., of Cedar Rapids, Iowa, from whom literature may be obtained.

WHOLESOMENESS AND ECONOMY

Do you know that one pound of phosphate alum baking powder costing 25 cents is the equivalent of two pounds of cream of tartar powder costing 100 cents? The one pound powder is the Calumet Baking Powder, and its wholesomeness has been attested by a committee of the ablest chemists in America, and will be attested by the knowledge possessed by every physician who will apply his knowledge in considering the contents of such powder.

A great trust "educated" the public into a belief that only cream of tartar is suitable for a baking-powder.

The hospital or the individual that accepts such false teaching exhibits ignorance and pays the cost of such ignorance. It does not pay to be fooled all the time.

THE HOLLISTER LIGATURES

The Hollister-Wilson Laboratories, of Chicago, are subsidiary to the packing house of Wilson & Co., and thus obtain its raw product under conditions favorable to a perfect finished product. The absolutely sterile gut of the animal is so handled that it remains absolutely sterile until it reaches the hands of the physician, and its tensile strength remains undiminished, thus making the perfect surgical ligature.

Their laboratories offer an exceedingly attractive line of sutures, bone splints, fascia, bone-filling, antiseptic lubricants, etc., all put up in attractive and convenient form.

Their new catalog should be in the hands of every surgeon and obstetrician. It may be had upon request addressed to The Hollister-Wilson Laboratories, Chicago.

SALINOS

Salinos is a simple saline cathartic that is at once palatable and freely soluble in cold water. It is such a cathartic as physicians like to prescribe, for it combines the agents most frequently prescribed in both acute and chronic cases of faulty elimination.

The Salinos Company of Minneapolis make no secret of its ingredients or mode of preparation. They simply claim for it that it puts into exceedingly desirable form the drugs most commonly used in a physician's daily work. Samples will be sent on request.

THE FAIRVIEW HOSPITAL

We commented in these columns, about a year ago, upon this hospital when it was opened to the public. Our comments could not be otherwise than enthusiastic, for the hospital was a valuable addition to the hospital service of Minneapolis. It has a superb location on the Mississippi river bank in a zone of perfect quiet; it has a well-nigh perfect building; and its staff is unexcelled. The rough edges of every new institution, as of every new and complicated machine, must have time in which to wear off.

Fairview Hospital is now in perfect running order, and at no point is anything lacking. Its laboratories, its training-school, and its various surgical and medical departments are in perfect shape, doing work that is making a decided impression in hospital circles in Minneapolis.

Its prices are as low as it is possible to make them with the service rendered, and it renders only such service as every invalid is entitled to, and none of the frivolous service sometimes offered the over-rich and the pampered who, in sickness or in health, set a pace too rapid for decency.

THE RECOVERY FROM TYPHOID

In spite of the improvements in general sanitation, typhoid fever still continues to exist, and is especially prevalent during the fall and early winter months. It is more than probable that most cases occurring in the larger cities are the results of infections contracted at the summer vacation resorts, where the water and food supplies are not as carefully safeguarded as in urban communities. Although many forms of treatment, designed to abort or cut short the disease, have been advocated from time to time, it is indeed doubtful whether such regulation of the infection has ever been accomplished. As the average course of typhoid is from four to six weeks, it is scarcely to be wondered at that the patient usually emerges from the attack in a generally devitalized condition. This is accounted for not only by the general toxemia incident to the bacillary infection, but also because the practically exclusive milk diet generally adopted deprives the patient of the natural food iron which ordinarily maintains the ferric sufficiency of the blood. Some degree of anemia is therefore almost always in evidence when convalescence is first established. The quickest and safest way to overcome this blood deficiency and to hasten revitalization and a return to the normal, is to give Pepto-Mangan (Gude) regularly and in full dosage. This thoroughly agreeable and acceptable hematic tonic is particularly serviceable in typhoid convalescence, because it does not irritate or disturb the digestion, nor induce constipation.

SIMPLIFIED METHOD OF TREATING RABIES

A survey of the statistics of cases of human rabies virus shows that it is not known how much or how little of the virus when injected, may result in the production of rabies in untreated cases. This fact makes it imperative that every patient should be given the full benefit of the doubt, and should receive a course which will confer the highest degree of protection. Such a course is the Lilly Intensive Treatment.

The Eli Lilly & Company Rabies Virus is prepared after Harris' (Dr. D. L. Harris, Professor of Hygiene and Preventive Medicine, St. Louis University, School of Medicine) modification of the Pasteur Antirabic Preventive Treatment. The vaccine virus is a standardized powder, the result of desiccating the pulverized frozen brains and cords of rabbits dead from fixed virus inoculation.

The advantages claimed for this method are its safety; the high immunizing quality of the vaccine; its economy of time and expense to the patient; the availability of the initial doses for prompt administration and the standardization of dosage.

The Lilly Intensive Treatment consists of fourteen doses (one daily) of the emulsified, powdered virus. The vaccine is marketed in syringe containers and is ready for immediate injection by the physician, who may administer the virus in his office or at the home of the patient. The treatment does not deter the patient from his daily routine.

HOW TO WATER THE LAWN AND GARDEN EASILY AND PERFECTLY

A good lawn and a good garden are a joy forever, and are easily obtained by proper watering. The Skinner System does the work as it has never before been done artificially. A 50-foot line attached to a tank or a water-system will water 50x50 in the garden, and do the work just as a rain does it. The illustration in the Company's announcement on an advertising page tells this story. We know from experience that it is true. A woman or a child can easily operate it.

But the Company's lawn sprinkler (The Lawn Mist)



The Lawn Mist

is the greatest improvement ever made in lawn-sprinklers. It is an ordinary water-pipe about twenty feet long, with wheels on one end, and nipples along the pipe. It throws a mist so fine that the water from it will not break down the most delicate flowers if it falls on them all day. It will water a terrace as will no other sprinkler; it can be moved with one hand as far as the attached hose will permit, and can be so moved while the water is turned on. The spray or mist is so fine that the water takes the temperature of the air before reaching the grass or plant, and this is highly desirable in early spring when city water is too cold for grass or plants.

The two systems are as near perfection as mechanical appliances can become.

THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, JULY 1, 1917

No. 13

METHODS OF GRAPHICALLY RECORDING TREMORS, CLONUS, AND REFLEXES*

BY R. EDWIN MORRIS, M. D.

Teaching Fellow, The Medical School, University of Minnesota
and

HENRY W. WOLTMANN, M. D.

Teaching Fellow, Nervous and Mental Diseases, University of Minnesota
MINNEAPOLIS

Tremor seems constantly present in all persons and is increased by voluntary movement, fatigue, and toxic conditions. From studies made at the University Hospital with the string galvanometer it was found that gross muscular movements, such as coughing, sneezing, and intentional movements, produce large excursions of the string which are readily distinguished from the oscillations due to the heart's action. Records of similar voluntary movements of different patients gave a difference in rate of oscillation of the string.

A large number of records of cases showing marked tremor, also of clonus and various reflexes, have been made, and the value of the results is of a most promising nature. Though this research has barely begun, it has progressed far enough to show that each reflex presents a definite form, and is modified by pathological conditions. The same may be said of clonus and tremors.

Tremors, in themselves, bring forward a field of study of the greatest importance and interest. As a result of our success in recording reflexes and tremors with the string galvanometer, the desirability was apparent of an apparatus which would graphically record the various movements

of tremors and reflexes, that would be small and compact, capable of being used by the physician in general practice.

As a result of our efforts the Tremograph has been devised. This I wish to present. It is used in conjunction with the recording apparatus of the Modified¹ Mackenzie Polygraph, and gives us a light compact apparatus for making definite accurate records of tremors and clonus in permanent form with the time element portrayed.

The Tremograph consists of two tambours set at right angles, so placed that one is vertical and the other horizontal to the axis of movement. These tambours are connected with the tambours of the Modified Mackenzie Polygraph by rubber tubing, and the movement is accentuated by the placing of spring vibrators of steel wire in front of the tambours. On the spring vibrators are metal olives, with screw adjustment, permitting their being placed in different positions along the wire. By using olives of different weights greater or lesser excursion of the writing levers may be obtained.

Various handles can be screwed on to the apparatus for securing records of different parts of the body: A, the first, or plain round handle; B, the dynamometer with screw attachment on one

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

1. Morris, R. Edwin: Modifications of Mackenzie Ink Polygraph. Jour. of the A. M. A., 17, 1916, vol. 66, p. 1922.

end, which permits apparatus being used for securing pressure tremors; C, a slightly curved plate, 2 in. by 3 in. in size, with two straps and buckles that permit placing it immovably on any part, especially used for reflexes.

In order to secure analogous records of patients under similar conditions, the following method of procedure is adopted.

The patient, whether seated erect in a chair or in bed, is placed in as comfortable a position as possible; if in a chair, the hands are on the knees and the feet flat on the floor. The handle of the Tremograph is placed upright in one of the patient's hands, and held between the thumb and extended and joined fingers with the horizontal drum to the front. Then instructions are given as to the movements to be made with the instrument.

The following movements have been used by us in securing records as being representative of all voluntary movements. Tracings are made of each side, right and left (R and L).

1. "R. T." (R & L), "Rest Tremor." This record is secured by having the patient raise the hand from the position on the knee (a) front and upward to full extension of arm, then (b) holding arm at full extension, then (c) returning to knee position. These movements are made in a definite time, five seconds to each move or position, the rate of movement being indicated to the patient by the operator's arm. This is of advantage as by so doing the attention of the patient is focused and any uneasiness relieved.

2. "P. T." (R & L), "Pressure Tremor," same as (1) rest tremor, only dynamometer (B) is used as handle and held gently in hand, arm raised (a), then at full extension (b) the patient compresses handle to limit, then at (c) released to gentle grip and returned to the knee. Record is made on tracing of grip pressure.

3. "F. N. T." (R & L), "Finger, Nose Test." The round handle (A) is used as in (1). The movement consists of four positions each occupying five seconds as in (1): (a) knee to full extension, (b) then elbow is bent bringing the instrument, still in vertical position, close to the nose, then (c) back to full extension, and (d) back to knee. The time is indicated by the operator.

4. "R. T. of Leg" (R & L). The metal pad (C) is used and is attached to the top of the foot. Each foot is brought up (a) to full extension, (b) held, and then (c) returned to the floor.

5. "H. K. T. of Leg" (R & L), "Heel-knee Test" Attachment (C) is used as in (4) and the movements are (a) to full extension, (b) heel brought close to opposite knee, (c) back to extension, and (d) back to floor.

These movements produce a series of tracings which cover practically the common movements.

The string galvanometer as used by us in securing our records of clonus, tremors, and reflexes is the type used in electrocardiographing and is a very complex and delicate piece of apparatus. Records may be taken either in the laboratory in Millard Hall, where the cardiograph is located, or from the University Hospital from the sending stations on the various floors with no appreciable difference as to the records. The electric impulses passing through the wires of an underground cable, direct communication is held with the cardiograph operator through a telephone. Electrodes are used similar to the type we use in cardiographing, small flat metal pieces with felt pad saturated with saline solution. The pad is covered with a dry section of paper napkin, and the electrodes are held firmly in position.

In securing reflexes or clonus records, one electrode is placed on the upper limb or on the spine, the other is placed on the furthest extremity obtainable. In eliciting a reflex the ordinary percussion hammer is used and registry of the strength of the blow is made.

By connecting one or two air cushions of a blood-pressure apparatus with the modified Mackenzie recording apparatus, one placed at a high position and the other the lowest position of the limbs, graphic records of clonus and tremors may be secured of one or more positions at the same time.

We are barely entering this work and it gives promise of good things.

Some typical tracings, tremographic and electrographic, will be demonstrated by Dr. Woltmann.

* * * * *

DEMONSTRATION BY DR. WOLTMANN

The present paper represents an effort which is being made to investigate more fully some of the most common, but as yet largely unexplained, phenomena seen by every medical man every day of his practice,—namely, tremor, reflex, clonus, and muscle movement. All that we shall attempt here is a presentation of certain develop-

ments in the study of these conditions, which have already yielded results of fundamental importance and which offer an exceptionally promising field for further investigation.

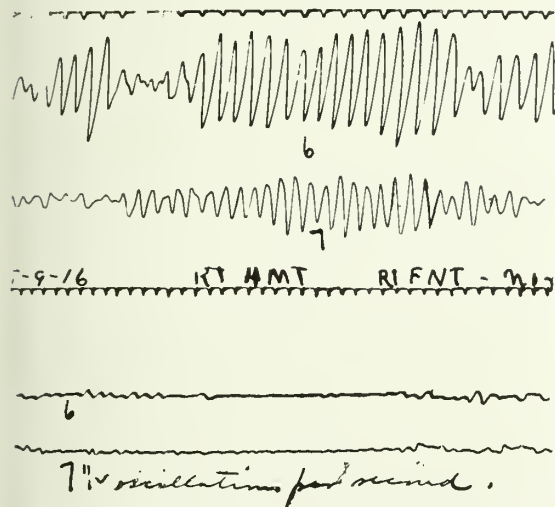


Fig. 1 (above), Fig. 2 (below). Tremor-tracings from two normal individuals (physicians), obtained by the Tremograph. Rate of time-marker, 5 oscillations per second.

Earlier in this report the method of attacking this problem has been indicated and the manner in which the following tracings were obtained was described.

The tracings, recorded by means of the Tremo-

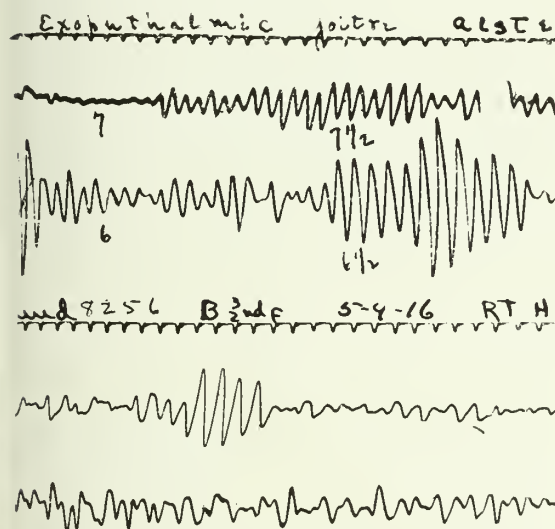


Fig. 3 (above), Fig. 4 (below). Exophthalmic goiter graph, shown in Figs. 1 and 2, were taken from two perfectly normal individuals, both of them physicians, and were selected to illustrate the extremes which may be found normally and to indicate the care which must be exercised in

interpreting tracings obtained in pathological conditions.

Figures 3 and 4 represent tracings taken from cases of hyperthyroidism exhibiting tremors. In

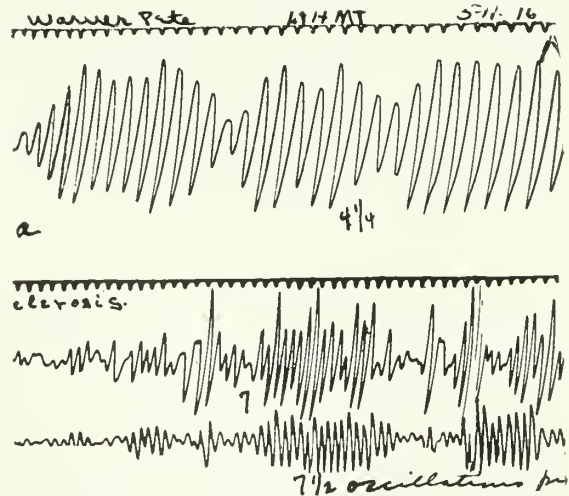


Fig. 5 (above), Fig. 6 (below). Chronic lenticular degeneration (Wilson's disease). Fig. 5, $4\frac{1}{2}$ oscillations per second; Fig. 6, $7\frac{1}{2}$ oscillations per second.

Fig. 3 the tremor is rather slow, six to seven oscillations per second, and coarse, a somewhat unusual type of tremor for this disease. In addition, it is of the so-called allorhythmic type, as shown by the series of fusiform nodes caused by increased amplitudes of vibration. This type of tremor, at one time considered almost pathognomonic of paralysis agitans, is now known to occur in a variety of conditions, one of which is

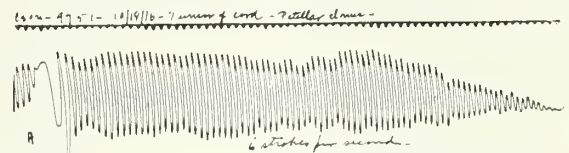


Fig. 7. Patellar clonus, 6 strokes per second. Diagnosis: tumor of the cord.

toxic goiter. Reference to Fig. 1 will show that a tendency to this type of tremor may occur even normally. In Fig. 4 the tremor is seen to be fine and rapid, hence designated as "vibratory," which is the type most frequently associated with exophthalmic goiter.

The two most interesting curves we have thus far obtained are shown in Figs. 5 and 6, the former from a case of chronic lenticular degeneration, or Wilson's disease; the latter is from a case of multiple sclerosis, both diseases in which the movement type of tremor is so characteristically and typically developed.

In Fig. 5 the tremor is seen to be very slow,

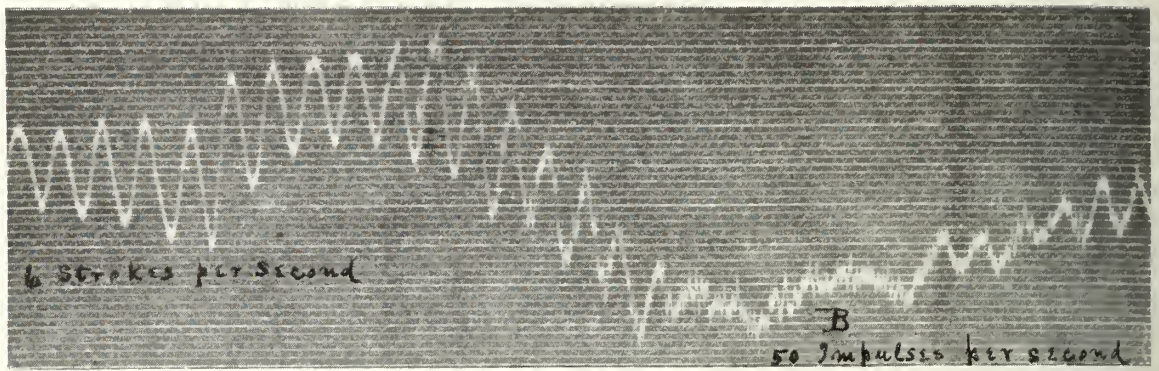


Fig. 8. Opening and closing the fingers.

having a rate of about four vibrations per second, and very coarse as compared with the tremor of Fig. 6. The tracing also illustrates the development of the tremor during voluntary movements. Thus, its appearance when the finger is carried to the nose, from a to b, its almost complete cessation while the hand is pausing at the nose, from b to c, and its reappearance when the hand is returning to the side, from c to d.

Though numerous methods have been devised for the recording of rest tremors and of the

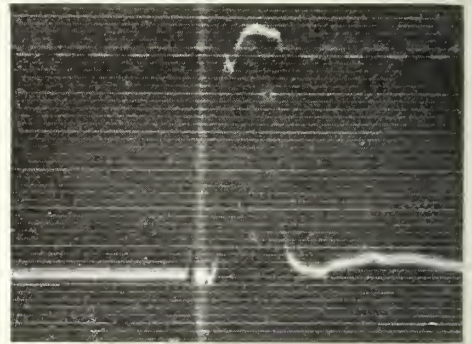


Fig. 11. Right knee-jerk.

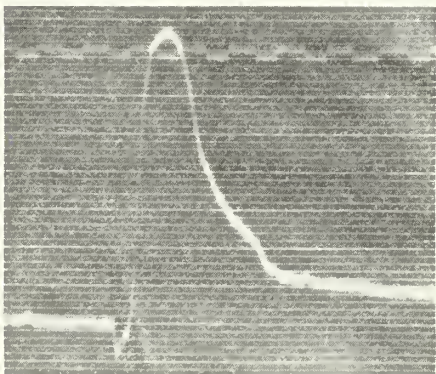
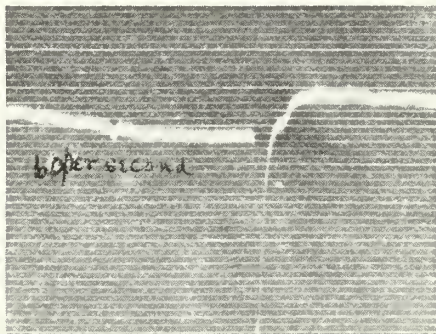


Fig. 9. Tendo Achillis (above). Essential tremor.

Fig. 10. Tendo Achillis (below). Case of lateral sclerosis.

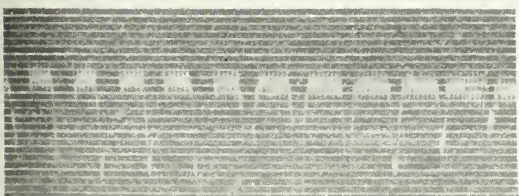
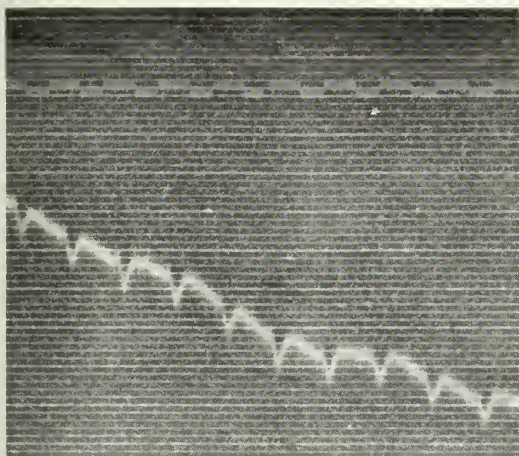
static type of the intention tremor, this is the first attempt, so far as we are aware, that has been made to obtain a graphic record of a movement, or locomotor tremor.

The remainder of the tracings were obtained by means of the Einthoven string galvanometer. Figs. 8 and 9 show the changes in electrical potential which occur during the tendo-Achillis reflex. The upper tracing, although obtained from a case of essential hereditary tremor, may be considered normal; the lower tracing and the one shown in Fig. 10 were obtained from a case of primary lateral sclerosis (Erb's type). Clearly, these two curves differ in several respects from that of Fig. 8. The fine diphasic waves appearing at the rate of about 60 per second, mark the separate nerve impulses traveling to the muscle in its innervation and represent what is known as the "action current."

In Figs. 12, 13, and 14 are recorded the oscillations of the galvanometer string during an ankle clonus. Of these, Fig. 12 is from a case of chronic lenticular degeneration; Fig. 13, from a case of hematomyelia, or hemorrhage into the cord; and Fig. 14, from a case of primary lateral sclerosis. We may ask, Why are these trac-

ings so different? Clinically, the ankle clonuses look alike. We are inclined to believe that there is some fundamental difference underlying the genesis of these phenomena, as seen in these cases, heretofore unrecognized.

The clearness and the uniformity of these rec-



Figs. 12, 13, 14. Ankle clonus. The upper figure shows $5\frac{3}{4}$ strokes per second, 62 impulses; middle figure, $6\frac{1}{2}$ strokes, 50 impulses; lower figure, 5 strokes per second, 20 diaphasic impulses per second.

ords make it perfectly obvious that we have here a method of investigation which is accurate and which promises to give us some valuable information. The field is new and large and we look upon our work as just begun.

DISCUSSION

DR. A. S. HAMILTON (Minneapolis): Ever since I first saw the string galvanometer in use it has seemed to me that it might give valuable information in conditions arising in the nervous system. I have therefore watched the development of this work, including the use of the Tremograph, with considerable interest; but, when it comes to discussing results in any intelligent way, I am quite unable to do so. Dr. Woltmann has already expressed the conservative attitude that we ought to maintain in this matter.

It is obvious that, when it comes to determining the rate, the amplitude, and the consistency of a tremor, the method is very efficient. One may look at a tremor and feel that one has a very fair idea of it; but to describe it in accurate terms so that another man can understand it, is a wholly different thing, and I believe anyone will find it very difficult to determine the amplitude or the rate of a tremor by ordinary methods of observation.

The determination of minor points, however, is by no means all we hope for from this work. There are much more important things to demonstrate. For instance, there are the tremor of senility, the tremor of alcoholism, and the tremor of exophthalmic goiter, and perhaps we might include also that of paralysis agitans, all more or less alike, and yet we recognize certain clinical differences. It is possible that the Tremograph will record these differences in a way that is very much more definite than one's general impressions can be. In other words, if there be a definite difference between the tremors that arise in different clinical conditions, this instrument ought to express it. If there be no definite difference, it is at least an interesting thing to find out.

Then consider such a phenomenon as the movements of chorea in childhood. There comes a time when the chorea seems to have altogether recovered, yet there remain certain movements which persist long after apparent recovery from the chorea. If there is a distinct difference between the movements of these two periods of the illness, this instrument ought to show it, and it may be of considerable value in differential diagnosis in cases of this sort.

How far the instrument will go, I confess myself quite unable even to suggest. Like others, I hope for a good deal from it, but I think that only when a large number of records have been collected, for instance, when all the records dealing with exophthalmic goiter are placed together and carefully studied, we may then learn that there is something which is distinct in the tremor in exophthalmic goiter as distinguished from that arising from alcoholism or other conditions; and, if so, this instrument will prove a very valuable addition to our instruments of precision.

DR. L. G. ROWNTREE (Minneapolis): I have been particularly interested in this work. It seems to me that in every field there has to be a beginning, and I feel this beginning has been a propitious one. However, this Tremograph has one obvious defect. I feel certain that any physiologist would find a flaw in it immediately—that is, there is a mechanical fling which is apparently not controlled. The work has progressed far enough to indicate there are fundamental differences in tremors, and it indicates that their extent and character can be graphically recorded. This counts for exactness, and we must have exactness if we are to have progressive medicine.

The reflex records are unique. A new field of work is opened up. We know very little about reflexes, but Dr. Morris has found a good point of attack. I am convinced that a development along the line which he is following will add much to our knowledge of the pathological physiology of nervous diseases.

I feel particularly proud of the fact that this beginning is being made here in the University of Minnesota.

PRACTICAL VALUE OF THE RÖNTGEN RAY IN GASTRO-INTESTINAL DIAGNOSIS*

BY HUGH S. WILLSON, M. D.

MINNEAPOLIS

The primary object of this paper is to present to the general practitioner, in concise form, what may be expected in the way of definite findings from the Röntgen ray alone in gastro-enterologic conditions. In the first place, it is to be noted that the shadow picture presented is a silhouette produced by filling hollow viscera with a substance impermeable to the ray, the ray penetrating the surrounding tissues to a greater or less extent, according to their respective densities. Thus a plate or screen image with the patient in anteroposterior position gives the outlines of the organs from one point of view only, and an entirely different picture is presented by rotating the patient a few degrees. In studying a case it is therefore quite necessary to get a silhouette at a sufficient number of tangents or angles to bring practically every point of the circumference to the margin. To do this with röntgenograms would require a considerable number, so the preliminary exploration is done with the screen. When the screen shows a margin out of normal and of small detail, it is then localized with plates at the correct angle for more minute study.

With the present improved machinery and technic the Röntgen ray has acquired an established place in diagnosis of the gastro-enterologic tract; and for certain conditions it affords the only reliable information obtainable aside from surgical exploration. We are not only enabled to study the shape, size, and position of organs, but can also make a physiologic study as to tonicity, motility, etc.—in other words, as to the mechanics of the gastro-intestinal tract.

Because of the fact that there is almost as much variation in the internal organs as in the features of individuals, it is essential to have the rather wide range of the normal well established in the mind of the examiner. The ability to say whether a given case presents the normal, or certain definite deviation from the normal, is obtained only by the careful observation of a large number of cases, tracing those with apparent pathological conditions to the operating-table. The comparison of the Röntgen findings

by the examiner, not with operating-room records, but by seeing the same field when the abdomen is opened, is essential to the successful interpretation of röntgenologic study.

Many have become overenthusiastic after a short visit to a gastro-intestinal Röntgen clinic or after a short course in the work by the spectacular quality, and, attempting to do their own interpretation, have been disappointed and inclined to condemn the procedure rather than their own limited training. Even men of the widest experience are constantly seeing new and puzzling shadows.

Let us now follow a bismuth meal through the gastro-intestinal tract, recording only those conditions in which we can obtain practical and definite information. With the patient in the oblique position to throw the esophagus between the spine and the heart, the barium slides rapidly to the cardia, where it is checked slightly for six or seven seconds. A diverticulum or stricture is easily seen. The pocket shadow of a diverticulum is usually characteristic. The stricture may be either benign or malignant, the latter usually giving definite finger-print margins. Cardiospasm is rather characteristic, usually presenting a diffuse dilatation and smooth margins to the shut-off at the cardia.

In the stomach the encroachment of malignant growths on the lumen, called "filling defect," is very characteristic with finger-print, moth-eaten margin. In earlier carcinoma there is only an infiltration of the gastric wall, giving a boardy appearance and an area which is skipped by the peristaltic wave. Cole takes a series of plates of a suspected stomach; and on superimposing margins an area of early involvement will give coinciding lines, while the uninvolved gastric wall will show on different plates a change in position due to peristalsis. The erosion of an ulcer crater is shown as a niche, and often affects the circular muscle zone on which it is located, giving an hour-glassing to greater or less degree, called an incisura. It is impossible to say when an ulcer is becoming malignant.

The incisura or hour-glassing without a definite niche must be studied out thoroughly, as spasm may be caused by many extragastric conditions, notably an irritated gall-bladder. An

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

extragastric tumor, as pancreatic, may, by pressure on the stomach, simulate a filling defect, but one is not ordinarily misled. Pyloric obstruction is a very frequent finding, and may be caused by cicatrix of ulcer, carcinoma, adhesive bands, or spasm. Usually these can be differentiated without much difficulty, but occasionally surgical exploration is necessary to determine the exact cause.

Contractile spasms are sometimes puzzling, but can usually be excluded as organic by the use of antispasmodics. Syphilis occasionally gives a filling defect or wall infiltration simulating malignancy or ulcer, and history, Wassermann, and occasionally microscopic examination of tissue, are necessary to differentiate.

Duodenal ulcer gives both direct and indirect evidence of its presence. The direct evidence is a deformed duodenal bulb caused by both the distortion from scar tissue and, more frequently, by spasm from ulcer irritation. The indirect evidence is an appreciable six-hour residue from a Reider meal and a hyperperistalsis. It is more satisfactory to employ both methods, as one may give evidence where the other fails.

The small bowel from bulb to ileocecal valve rarely shows a chronic pathological condition. We can occasionally demonstrate chronic obstruction by pressure or bands, probably of more frequent occurrence in the region of the ligament of Tritze, giving a dilated, writhing duodenum. Diverticula of the small bowel are difficult to demonstrate on account of the filled adjacent loops. A Lane kink can usually be demonstrated in the screen. The terminal ileum will be in the pelvis at a sharp angle to the colon, and cannot be pushed up. If markedly obstructive, the terminal ileum will be dilated, and a very thin stream of bismuth will be seen at point of obstruction. In studying the small intestine and colon, palpation is facilitated and more definite results are arrived at by having the patient relaxed in dorsal position. The organs can thus be brought up out of the pelvis, and palpated for small detail, as, for instance, to determine if the bowel is fixed or freely movable, if adhesive bands are present, etc.

The cecal region is an interesting one for study, and we probably have much yet to learn in the interpretation of its shadows. The appendix, for instance, can be filled in a large percentage of cases, and frequently the study of the lumen gives quite definite findings as to position, kinks, and stones, and especially as to

whether it is definitely tender when palpated directly under the guidance of the eye. We have more than once had occasion to say that the appendix was present when it was supposed to have been removed; especially on one occasion during exploration our insisting that the appendix was present caused a rather prolonged search with the disclosure of a marked chronic appendicitis. These findings are of especial value in the presence of abdominal adhesions. Taking the colon as a whole, a very definite study of contour, position, and mobility can be made, and the presence of any pathological conditions making a change in any of these, can be clearly demonstrated. The most frequent question asked with reference to the colon is whether or not carcinoma is present, and this question can be quite definitely answered.

In chronic constipation the most exact way to determine the type, if colonic, is by tracing through a barium meal followed by a barium clysm. Atonic and spastic types present extremely different pictures. Chronic ulcerative colitis gives a rather typical picture with the absence of haustral markings due to the thickened bowel wall. Obstructive bands give a clean-cut break in contour very different from malignant obstruction. Diverticulitis gives a typical picture if the diverticula are not obstructed. Displacements and all degrees of colonic dilatation of the Hirschsprung type are seen in cases examined for colonic symptoms.

CONCLUSIONS

Percentage statistics are necessarily inaccurate, for very few of our cases are explored on subjective symptoms only, and therefore we cannot know how many called negative actually have organic lesions.

Those conditions in which fairly definite evidence can be obtained are—

Esophagus. Obstruction, malignant or benign, cardiospasm and diverticulum.

Stomach. Gastric ulcer can be demonstrated in about 80 per cent of cases. In gastric carcinoma we do not know of having failed to show one; if these cases were examined in a very early stage, many would undoubtedly escape observation. Occasionally a deformity is seen which we feel certain is luetic. Extragastric tumors, adhesive bands, etc., give quite definite visual findings.

Small Bowel. Obstructive conditions, such as a Lane's kink, volvulus, bands, loops through a

hole in the omentum, are definite if worked out carefully.

Colon. Appendical shadows can be shown in about 65 per cent of cases examined, with occasional definite pathological condition. Obstruc-

tive conditions, both malignant and benign, can be worked out in a very high percentage of cases. Displacements or enlargements are distinct. Diverticular shadows are characteristic.

FOR DISCUSSION SEE PAGE 435

THE RÖNTGEN DIAGNOSIS OF NON-TUBERCULOUS DISEASES OF THE LUNGS*

BY ALEXANDER B. MOORE, M. D.

Mayo Clinic

ROCHESTER, MINNESOTA

In speaking on so extensive a subject as the Röntgen diagnosis of non-tuberculous pulmonary diseases, it has seemed best to limit the discussion almost wholly to a demonstration by lantern slides and to cover as nearly as possible only the more important conditions, those most commonly encountered, and to emphasize the most salient points in the diagnosis and differentiation.

The non-tuberculous pulmonary lesions are very difficult to classify satisfactorily. Probably the best classification is the most simple: to subdivide them into malignant and inflammatory conditions, further subdividing the malignant into primary and secondary.

In my experience, primary malignancy is rare and presents a very hazy and indefinite clinical picture. Röntgenographically it presents almost as indefinite a picture, and in many instances the diagnosis cannot be made. Primary malignancy occurs in three forms,—the infiltrative, the miliary, and the mixed. The first, or the infiltrative, form is indicated by a massive shadow around the roots of the hilum with no evidence of surrounding areas of inflammatory reaction, and is usually localized on one side. The miliary form is characterized by multiple discrete areas of increased density extending throughout both lungs, and shows no tendency to form cavities. The mixed form, as its name implies, resembles both forms described, and is probably the commonest type of the disease. Primary malignancy is distinguished from inflammatory conditions by the absence of any surrounding zone of inflammatory reaction and by the absence of a cavity-like appearance.

Secondary malignancy of the lung is very far from uncommon. In a recent series of seventy-one cases which were studied clinically and rön-

genographically, we were struck with several points that I believe have a considerable bearing on our treatment of malignancy. In these cases the primary focus was distributed throughout all the organs. The commonest focus was carcinoma of the breast, but, when we consider the high percentage of carcinomas located in the breast, I question very much whether carcinoma of the breast is any more prone to give pulmonary metastasis than any other carcinoma.

The next most common focus was carcinoma of the thyroid. Carcinoma of the kidney, the soft tissues of the arm, the leg and thigh, the lip, the testis, the bowel, and the stomach—all came in for a fair representation in this series of cases.

The most striking feature of secondary carcinoma is the indefinite clinical picture. The most common symptom noted in 71 cases was cough which occurred in 32. There was nothing characteristic in the cough. There was probably no more cough present than would be found in a number of patients of the carcinoma age. The second commonest symptom was dyspnea, which was present in 30. This is more or less characteristic. There are usually also symptoms of asthma, which is gradually progressive. This was present in only 30 out of 71 cases. Pain was present in only 14 out of 71 cases. So we may say briefly that the clinical picture is hazy.

From the röntgenologic standpoint, a definite diagnosis of secondary carcinoma was made in 58 of the 71 cases, and a probable diagnosis in 12. In one case there was an error, which was one of interpretation and must be charged up as a personal error, and not against the Röntgen ray.

The secondary carcinomas appear röntgenologically as circumscribed nodules, clearly circumscribed, without an inflammatory wall and

* Abstract of paper presented before the Minnesota State Medical Association, Minneapolis, Oct. 12-13, 1916.

without the fimbriated edges characteristic of lung abscess. They are usually multiple, prone to be situated nearer the bases than the apices of the pulmonary lobes, and exhibit no tendency at all to cavitation.

Of the non-tuberculous inflammatory conditions that are most common and that we shall consider briefly, the most important are bronchitis, bronchiectasis, and lung abscess.

Bronchitis in the röntgenogram gives a fine string-like shadow along the course of the main bronchi. These shadows, which radiate outward from the hilum, do not reach the periphery of the chest, and vary in density with the degree of congestion present. The increase in density is unquestionably due to increase in the amount of blood in the peribronchial vessels and to fibrous changes caused by the irritation in the bronchial walls.

Bronchitis may be divided from its Röntgen appearance into three types—the infiltrative, the cylindrical, and the sacculated.

The infiltrative type is characterized by a defi-

nite peribronchial increase in density, usually localized in the lower lobes, the shadows extending to the periphery of the chest and usually obliterating the costophrenic angle.

The cylindrical type resembles the infiltrative, but numerous small pseudocavitations are present. These are caused by the dilated bronchioles and are surrounded by dense peribronchial infiltration.

The sacculated type is characterized by multiple large pseudocavitations separated by very dense fibrous tissue. These types represent different stages of the disease, and many cases are seen in which the types are mixed.

Lung abscess appears in the röntgenogram as a large area of increased density if the cavity is filled or as an area of decreased density if it is empty. The characteristic fluid level of a partly empty cavity is often observed. An abscess differs from a tumor in the inflammatory zone which surrounds it, and from tuberculosis in its greater size and its location.

FOR DISCUSSION SEE PAGE 435

THE EARLY RÖNTGEN DIAGNOSIS OF PULMONARY TUBERCULOSIS*

BY FRANK S. BISSELL, M. D.

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MINNEAPOLIS

It is axiomatic that the chief hope of permanent cure of pulmonary tuberculosis lies in its early and positive diagnosis. Since this has always proven a baffling problem to the internist, it was not unnatural for the latter to turn hopefully to the röntgenologist for aid in its solution. Early attempts in this direction were not entirely successful, and thoughtless ones at once concluded that since the method was not a panacea, to be applied as an unerring formula, it must be, entirely and for all time, without value. To these, it was not apparent that this new application of anatomical facts and pathological principles could not be made without time-consuming study, and inevitable errors and corrections thereof.

Today we are living in the middle ages of röntgenology. The barber-surgeon has passed, to be superseded by the orderly-elevator-boy-nurse-röntgenologist, who, unlearned in the

pathogenesis of disease, is actually called upon by the physician to aid him in his diagnoses. Thus is the development of the greatest diagnostic agent ever given to the medical profession placed under a serious handicap. We witness this waste of clinicoröntgenological material in many of our large hospitals with regret, but are powerless to prevent it until our own profession comes to realize that the science of röntgenology is infinitely more than the art of radiography, and that medical men must be encouraged to devote their knowledge to its advancement.

The term *röntgenologist* properly applies only to the doctor of medicine who, by special study, has become somewhat proficient in the science of röntgenology. Such an one, when he attempts an early diagnosis of tuberculosis, approaches his problem with the same caution and thoroughness which distinguishes the internist. He obtains, either from referring physician or patient, a complete case-history, since it is a well-established axiom of medical practice that no diagnosis may

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

be ventured without such data as the anamnesis affords. He attempts to eliminate, as far as the facilities at his disposal permit, lesions other than tuberculosis which may explain those symptoms wholly or in part. Especially are all devitalized teeth rayed to determine the presence or absence of root abscesses, since a peribronchial infiltration, slightly resembling that of tuberculosis, probably results from these foci of streptococcic infection. Under the fluoroscopic screen the posterior mediastinum is searched for glandular enlargements, gummata, etc.; and the diaphragmatic excursion is observed, since that of one side may lag behind the other in its movements, thus pointing indirectly to an inflammatory process in that lung.

The *sine qua non* of this problem, however, is the stereoscopic röntgenogram. It is through this agent alone that an early positive or a definite negative diagnosis can be reached. The non-stereoscopic röntgenogram is unscientific and deceptive, and should never be employed in lung diagnosis. To rely upon the röntgenoscope, to the exclusion of the röntgenogram, is the height of folly, since it is quite impossible thus to visualize the earlier changes of this disease. He who depends too much upon physical signs, skillful though he may be, will overlook many well-advanced cases in which physical signs are temporarily absent. Physical signs are of inestimable value when found in association with positive Röntgen signs, but by themselves they are likely to prove misleading and unreliable. The best results in diagnosis are obtained through the close co-operation of the experienced röntgenologist and internist, since their observations, made independently, will usually co-ordinate in a most beautiful and convincing manner.

The interpretation of the chest stereoröntgenogram offers a problem of sufficient magnitude to be attractive, while its potential exactness appeals to the mind of scientific tendencies. One must have acquired, through considerable experience, a knowledge of the infinite variations in density which occur within the röntgenograms of healthy individuals, as well as the specific changes which characterize various infections and new growths in the lung. To this end he must have rather a clear conception of the anatomy of the lung and especially of the relation of the bronchial tree, and the lymph and vascular systems to each other and to various lobules of the lung. Several salient features of such a conception stand forth rather prominently in their bearing

upon the early Röntgen diagnosis of tuberculosis; the fact that the lymphatics in the mesial part of the lung drain toward the hilus, while those of the peripheral portion flow pleura-wards and are supplied with efficient valves, explains why a root-infection is not disseminated to the periphery as many authors have claimed; why a primary infection of the pleura is sometimes not carried to the lung parenchyma; why early involvement of the pleura so frequently follows involvement of the lung in its peripheral portion. The presence of masses of lymphoid tissue at the numerous points of bifurcation of the bronchi, where the early dissemination of tubercles is prone to occur, and the proximity of arterioles to bronchioles throughout their infinite ramifications may explain, in part at least, the faint striae observed at the periphery of the tuberculous lung, since, when thrombosed and obliterated, they become more röntgenizable. The various primary and secondary lobules, each with its quota of lymphatics and blood-vessels, may account for the triangular-shaped shadows, frequently observed when the lymphatics of a given lobule become engorged as a result of active tuberculous involvement. This triangle has been described by Sluka in children, and by Dunham in adults. The anatomical data herein employed are taken from models, sections, and descriptions prepared by Dr. Wm. S. Miller, of the University of Wisconsin.

The differentiating characteristics of the early Röntgen signs of pulmonary tuberculosis may be summarized as follows:

A. *The Physical Character of the Tuberculous Shadow.*—The lesion of recent origin is characterized by changes in the röntgenogram which are more shadow-like and less distinct, both as to density and size, than those which accompany other lesions. This general rule applies whether one considers the actual tubercle-like mottling of a given area of the lung field, the veil-like network, or the cloud-like triangle, with its apex toward the hilus. It does not apply to the older lesions accompanied by caseation, calcification, fibrosis, etc., but, if the process is in any degree an active one, some area can usually be found in which the finer characteristics predominate.

B. *Interweaving or Interlineation.*—The normal bronchial tree, with its accompanying blood-vessels and lymphatics, produces radiating striations within the röntgenogram, usually heavy near the hilus, but becoming ever fainter and fainter until they disappear at a considerable

though variable distance from the periphery. In the presence of a recent tuberculous lesion one may frequently observe similar, though fainter, lines nearer the periphery, apparently with a richer arborization, giving the field a mesh-like appearance. Any attempt to explain this sign must be based upon an unproven hypothesis, since the cause of its occurrence has not been definitely proven. To the writer the most reasonable explanation is that of thromboses of peripheral arterioles. It is a well-established principle of röntgenology that a thrombosed blood-vessel is more röntgenizable than a normal one. Multiple tubercles developing at certain points of bifurcation, tend to produce infectious thrombi in the proximal arteriole, the numerous branches peripheral thereto being thereby obliterated. While this interweaving striation is not a constant sign in tuberculosis, and may rarely occur in the presence of other infections, it is sufficiently characteristic, when present, to be of great diagnostic value.

C. The "fan" or "triangle," with its apex directed toward the hilus, has already been ascribed to lymphatic engorgement within a given lobule. In the experience of the writer, it is present in the röntgenogram with relative infrequency, but when it occurs it is probably pathognomonic of active tuberculosis.

D. *Distribution*.—In direct contradistinction to other pulmonary infections, the tubercle tends to develop first near the periphery of the lung. The resultant shadows in the röntgenogram appear usually near the terminal distribution of the first and second interspace trunks of the bronchial tree, or well toward the apex of the lung along the vertebral trunk. This trunk passes nearly perpendicularly and parallel to the shadow of the great blood-vessels above the heart. The well-known frequency of early pleuritic complications in this disease may be explained by the proximity of these peripheral foci, by the intercommunication of the lymphatics of the lung and pleura, and by the fact that the bronchial artery sends certain radicles to the pleura. At any rate, we always look for, and usually find, evidence of peripheral infiltration in tuberculous pleurisy cases. The second point of election for the earlier tubercles is near the apices of the lower and middle lobes, and at these points, too, the observer may see the arched white line of thickened interlobar pleura. This rather typical distribution of the earlier lesions of pulmonary tuberculosis is a most important point in differ-

ential diagnosis, since other lesions similar in character are usually more widely and diffusely disseminated.

With these characteristics clearly conceived, the stereoscopic röntgenogram of the tuberculous lung reveals itself to the röntgenologist as unmistakably as does the microscopic section to the microscopist. A mental state of confused uncertainty is replaced by one of scientific assurance.

Differential diagnosis must include streptococciosis, bronchiectasis, anthracosis, syphilitic infiltration, and the lung of passive congestion. Streptococciosis produces a widely disseminated infiltration, and the mottling in the röntgenogram is more dense and conspicuous, while the early tuberculous lesion is limited to certain areas, and is characterized by relative indistinctness. Both bronchiectasis and anthracosis are marked by gross shadows, the former by its cylindrical or sac-like pockets, the latter by its more massive appearance; and unless they complicate and cover up a tuberculous lesion, they offer but little difficulty. Syphilitic infiltration of the lung is relatively rare, but when it occurs it seems to closely resemble a well-disseminated tubercle; however, it is not so prone to produce lymphatic engorgement or bronchopneumonia, with its triangular fan-shaped shadows, and the peripheral interlineation, when present, is more like that seen in fibrosis. The *Stauungslunge*, or lung of passive congestion, is much more like that of anthracosis, and offers no difficulties to the experienced observer.

Activity.—It is frequently stated that röntgenology offers little of real value in the early diagnosis of tuberculosis because it fails to distinguish between the active and inactive lesion. This statement is based upon the faulty conception that the visualization of the actual tubercle and its accompanying fibrosis, together with glandular hyperplasia, which are permanent changes, are the sole support of röntgenological claims. More important than these are the lymphatic engorgement which occurs only in the presence of active disease, and the arterial thromboses, which in the richly vascular lung are absorbed after the disease has become quiescent.

With this röntgenological picture of the disease clearly in mind, it becomes less impossible to determine the activity or quiescence of a given lesion with some certainty. The descriptive terms *recent* and *old* are perhaps preferable to

active or *quiescent* since the distinction is not so fine.

In a grand total of 988 cases, in which stereoröntgenograms of the lungs have been examined by the writer since November 1, 1911, an attempt has been made to correlate the clinical evidence with the Röntgen diagnosis. This has been difficult in a large number of cases and impossible in many, since some of them are dispensary patients, who are prone to drift beyond the ken of man. The few cases which come to autopsy are the least interesting ones, since they belong to the advanced type in which terminal changes have obliterated the earlier ones with which we are chiefly concerned. In drawing conclusions from this series of cases, therefore, it seems better to generalize than to attempt any statistical deductions. It may be stated that the cases which are most amenable to physical diagnosis, those with primary involvement of the pleura, are most likely to prove baffling to the röntgenologist. At times the röntgenogram appears perfectly normal, while at others there is only the slight diffuse density over an apex of one lobe, due to the pleuritic cap. On the contrary, those cases which offer the most unmistakable signs, deep in the parenchyma of the lung, frequently escape detection by other means. Activity is often determined more definitely by symptoms and physical signs than by Röntgen signs, but the latter are of great assistance in such cases, affording, as they do, an objective stimulus to the efforts of the diagnostician. The disease may be so slowly progressive that it heals in one area of the lung as it develops in another, thus continuing through life to handicap the host without reaching an advanced stage or producing classical symptoms. The patient suffering with this type of phthisis is usually classed as a neurasthenic and doubtless many have been cured by the rest, excess feeding, and graduated exercise treatment of a Wier Mitchell.

The symptoms are those of any low-grade intoxication, and frequently the only objective evidence of disease is found in the stereoscopic röntgenogram. It is this type of case which, according to von Ruck, improves so remarkably under tuberculin administered by the Trudeau method.

A few specific cases may serve to illustrate the practical value of the Röntgen method when properly employed, as well as to differentiate various types of the disease.

CASES

Type No. 1.—Case of Dr. W. H. Auwand, February, 1912. The patient complained of slight but constant pain in the back (described as "backache"), and easy fatigue. A careful examination of the lungs was negative, and there was no cough or temperature. Röntgen signs were definite, and a positive diagnosis of early pulmonary tuberculosis was made. The case proved to be of the progressive type, and the patient died of pulmonary tuberculosis in December, 1915.

Type No. 2.—Case of Dr. S. M. White. Miss F. is of the neurasthenic type. She has consulted many physicians, and as many diagnoses have been made. Röntgen signs are those of tuberculosis of the latent type. No "fan" or "triangle" present, but there is interweaving and typical mottling at the periphery of the lung. Diagnosis, pulmonary tuberculosis. Later, a positive reaction to 5 mg. of old tuberculin confirmed the diagnosis.

This type of tuberculosis must be recognized by the profession as a distinct entity. It is the type which has caused such great differences of opinion relative to the value of the tuberculin test; also the type which is so prolific of life-long neurasthenic symptoms.

Type No. 3.—Miss H. was a nurse who had been under treatment in a tuberculosis sanatorium for the previous six months. Röntgen examination was entirely negative. Her symptoms were those of a low-grade intoxication, which might be caused by any infection. The alveolar processes were rayed, and osteitis was demonstrated at the apices of several roots. After removal of these teeth the patient recovered, and has remained well for two years.

Numerous cases similar to this one have proven the great value of the negative Röntgen diagnosis.

Type No. 4.—Mrs. D., referred by Dr. Gardner, was observed for some time, but had no rise of temperature, even under the auto-inoculation test. Physical signs were slight at the time of the examination, and indefinite.

Röntgen diagnosis: early pulmonary tuberculosis, with rather slight infiltration, but wide dissemination.

Eighteen months later: there has been no rise of temperature at any time, but there are now cavity signs and tubercle bacilli in the sputum.

Type No. 5.—Mrs. S., another case of Dr. Gardner's, seen in March, 1916, had failed to recuperate with satisfactory rapidity after childbirth. No physical signs were demonstrated.

Röntgen diagnosis: incipient pulmonary tuberculosis.

This patient called at my office two months ago to tell me what she thought of me, because another physician of unimpeachable integrity and ability had told her that she was not tuberculous. I could only restate my conviction that the Röntgen signs upon which I relied were unmistakable. Today I learn that she has just been discharged from the hospital with a tuberculous sinus to the pleural cavity. The Röntgen diagnosis is vindicated.

PROGNOSIS

During the past year the writer has, in selected cases, ventured an opinion, based upon Röntgen observation, as to prognosis. While this work is perhaps too new to justify any established convictions, a brief summary of the rules followed in

forming these opinions may be a fitting conclusion to this paper:

The typical dropped heart seems to occur in patients whose immunity to tuberculosis is high. When such a heart shows evidence of hypertrophy in relatively advanced cases, the prognosis is more favorable than when it is merely dilated or remains small. Evidence of considerable fibrosis, tending to circumscribe areas of beginning excavation, is a distinct indication of slow progress, and points to a relatively favorable prognosis.

DISCUSSION OF THE THREE PRECEDING PAPERS

DR. E. T. F. RICHARDS (St. Paul): One very striking fact brought out by all of these excellent papers is that *x-ray* diagnosis has attained a very important field of its own in the medical sciences. As clinicians we should encourage the work of the röntgenologist in every way and should applaud the great strides made in this science during the past few years. Not so very long ago the general practitioner had to take and interpret his own *x-ray* plates, but, fortunately, that time has gone by and we now have röntgenology as a distinct science demanding constant study and investigation on the part of its workers. The profession should show its appreciation of these facts and should discourage attempts on the part of the untrained individual to interpret his own *x-ray* plates. This especially applies to border-line conditions, such as early tuberculosis of the lungs and early carcinoma of the gastro-intestinal tract.

As an aid in the diagnosis of early pulmonary tuberculosis the stereoscopic röntgenogram has, I believe, come to occupy a very definite and important position. The greatest difficulty has been, perhaps, in determining what is the normal lung picture, as the lung is subject to so many infections of various characters, all of which leave their traces on the lymphatic and vascular structures, that to arrive at the normal has become a very difficult problem. Further studies upon this fundamental point are greatly to be desired.

In discussing certain pathological changes in the lung, Dr. Bissell has mentioned the stereoscopic findings which, so far as we know today, can be accepted as characteristic of early pulmonary tuberculosis. Such a röntgenological diagnosis should invariably be correlated with a very careful detailed history of the individual's illness. In early lung tuberculosis it is often the minor and seemingly insignificant features in the history which are of great importance. This is particularly true of such symptoms as fatigue without any apparent cause, both mental and physical; vasomotor phenomena; minor gastric and intestinal disturbances; and other evidences of absorption, such as "myalgia" and "neuralgia." In individuals harboring an early or incipient tuberculosis there may be no cough, there may be no appreciable rise of temperature, and a searching physical examination may reveal no localized lesion. A very common feature, however, and one which should be kept constantly in mind, is the slight increase in pulse-rate which such persons carry. This has often been, in my experience, the clue to an otherwise "concealed" tuberculous focus. It is just in this type of case

that the stereoscopic röntgenogram of the lungs finds its greatest usefulness. It is not being utilized enough, and for the sake of the individual's future should certainly occupy a more prominent place in the attempt to make an exact and early diagnosis.

In addition to the history, the thorough physical examination and the stereoscopic *x-ray*, we have also in the early diagnosis of pulmonary tuberculosis a valuable agent in tuberculin. There has been a great difference of opinion regarding tuberculin, but, carefully administered and accurately interpreted, there can be no question that it gives us some very important facts in the doubtful case. It is purely a corroborative measure, and as such should always be regarded.

I wish to congratulate the writers of these papers upon the excellence of their work and to thank them for the interesting series of *x-ray* plates which they have shown us.

DR. R. G. ALLISON (Pokegama, Minn.): I am not a röntgenologist at all; and my experience with the *x-ray* has been principally as an aid to me in tuberculosis work. We installed the *x-ray* at Saranac Lake in 1912, but it was far from being accepted by all the gentlemen there at that time. Now I think the consensus of opinion among the men there is that they are perfectly willing to accept a negative diagnosis of pulmonary tuberculosis from the stereoscopic plates. When a lesion is found they prefer to determine, as far as possible, by a month's observation taken in connection with the history the patient may give for the previous three months, whether the process is active or not.

One great aid we have found in the *x-ray* is especially in artificial pneumothorax. In many cases before the use of the *x-ray* we induced artificial pneumothorax with the opposite lung absolutely negative so far as physical signs were concerned, and after a few weeks we found that we were confronted with a rapidly spreading process in the supposedly healthy lung. Since taking routine stereoscopic plates of every patient to whom we wanted to give artificial pneumothorax, in a high percentage of cases we found a central tuberculosis on the opposite side which gave no physical signs at all, but which in a few weeks developed and gave definite stethoscopic evidence of consolidation. Once you have put five or six hundred cubic centimeters of nitrogen into the chest, the physical signs become thoroughly misleading. You cannot tell whether you have 500 or 2,000 c.c. in the chest. Nor can you tell how nearly the lung approximates the chest-wall. By screening or plating each patient before injection, the gas pockets are easily located and the danger of air embolism thus avoided.

One of the most important helps that the *x-ray* is to us is in the differential diagnosis of tuberculosis from non-tuberculous conditions. From a study of his plates the röntgenologist, even if unable to make an absolute diagnosis, can at least name two or three definite possibilities. Further clinical investigation with these possibilities in view will usually give the correct diagnosis.

We have been expecting too much of the *x-ray* operator. I do not think we have given him a fair deal. We have sent cases to him, and demanded diagnoses with insufficient clinical data. He has tried his best to conform, but many times has been led astray very much. Though not applicable to the large cities, the method used at Saranac Lake is satisfactory. There is but one

x-ray equipment in town, and to it all cases are sent. In the evening between seven and eight the physicians of the town meet and observe the plates which have been taken for the day. The various diagnoses are carefully gone over; the x-ray operator gives his findings; the clinician gives the clinical side of the case. Then any suggestions those present may have in regard to further laboratory or other investigation are followed out. Then a week later, after further study and observation, these same cases are brought up, and the diagnosis of each case is discussed in full.

About the subcutaneous tuberculin test: I think we shall have to be very careful in drawing any deductions from that test. Of the majority of cases of mal-diagnosis sent to us, about two-thirds were sent because they reacted generally to from one-tenth to ten milligrammes of old tuberculin. I remember distinctly of one case of hyperthyroidism that reacted to three milligrammes of old tuberculin, and was sent up with a diagnosis of tuberculosis, with radiographically negative lungs. Certainly, with the majority of investigators finding out that about 66 per cent of normal individuals react generally to three milligrammes of old tuberculin, we have to be very slow about taking it as a criterion of the activity of the process. I think that, if we are to draw any deductions from the subcutaneous tuberculin test, it must be from dosages much smaller than three milligrammes.

DR. CHARLES MAYO (Rochester): I was sorry I did not get in in time to hear all these papers, as I am very much interested in the reports from the work at Saranac Lake, in which the entire country takes such a great interest.

There is no question but that a great many people are treated for tuberculosis who do not have tuberculosis. We have some of the early stages of tuberculosis in young women sent in to us for operation on goiter, the beginning of exophthalmic goiter, because they have a quick pulse and a little fullness of the neck. I believe this is a conservative expression on the part of the thyroid in response to the chronic toxemia of tuberculosis. Many people come to us giving a history of having spent a long time, one or two years, perhaps, in various sanatoriums, being treated for tuberculosis, and the most careful examination by the x-ray does not reveal any evidence of their ever having had tuberculosis. The work at Saranac Lake confirms our observation that a good many people are sent in on their own testimony of not feeling well and running down a little, and that they must be tuberculous.

Persons with tuberculosis are usually very hopeful, and thus we find in them a driving energy, a little quickening of the pulse, a little improvement of the circulation—men like Robert Louis Stevenson, who are able to do their life-work and leave a great record behind them.

One of our greatest surgeons, who recently died, was driven by such energy that he was able to accomplish a great work throughout his life. This energy, his hopeful disposition, and his ability to do things, although his work gradually wore him out, enabled him to bring out an enormous amount of work as compared with the individual work of other men.

I look on tuberculosis as not such a terrible thing today, since we are able to take care of ourselves. Per-

haps in order to be more productive, some of us should be inoculated with the germ.

DR. C. A. DONALDSON (Minneapolis): There are a few items I would like to speak about with reference to defects shown on the x-ray plate or screen. Dr. Willson has very vividly shown these defects in the stomach and esophagus shadows, and for a very evident reason he has shown the more advanced cases. That is a necessary part of the instruction of those who have not given attention to röntgenology. But the surgeon and the internist demand of us that we shall diagnose, not only the advanced cases, but the early ones, those cases that show with difficulty in the best records we can get. You can use either the inch or the millimeter rule, and the size of the defect shown will illustrate the very great ease with which you make your diagnosis or the difficulty of it. If the individual is to get any real value from us, we must recognize the very small defects.

Just a little illustration of the comparative use of the screen and plate: There is an unfortunate contest between the value of these two, which should be, and I hope soon will be, eliminated. They are both necessary, but the screen is the image of gross defects, the finer defects must be shown on the plate. While you cannot get the finer lesions in many cases on the screen, you do get important movements.

A very fortunate diagnosis is recorded by Cole recently, where the surgeon was unable to find by palpation in a laparotomy anything in the stomach until the stomach was opened, and yet that case proved to be a beginning carcinoma. Now, unless we can get these earlier shadows we miss the diagnosis. A positive diagnosis of these advanced cases is not so important. To make correct early diagnoses we must often use the serial plate for recognition of the disease.

Just recently I had this experience: The screen showed a slight defect at the pylorus, not enough for positive diagnosis. The first plate showed a definite defect in the filling. Then I prepared the patient for a serial plate, and I secured six views on one plate; one of them was not readable. Of the five readable views, four showed a definite filling defect; the fifth showed there was no defect in the filling at all, thus compelling a negative diagnosis, and yet with this precaution, that the negative diagnosis should be watched for a possible early or precancerous stage. What was the meaning of the four filling defects before the stomach would balloon enough so that the pylorus gave its full shadow? We do not know, and I do not know that any of us can tell. But such cases should be studied in the next few weeks, to be sure that we are not omitting a demonstrable pathological shadow.

Another case, this last week, with reference to a stricture of the esophagus: The doctor showed us very clearly the difference between a spasmodic closure and a carcinomatous growth. But this last week I had the "spasmodic" shadow, that V-shaped, smooth-edged affair, giving every evidence of a spasmodic closure, with this history: During the previous two weeks he had had two vomiting attacks of free blood. Now, are we dealing with a spasmodic case or with a very early beginning carcinoma? And, if the latter, that case must have every possible available study.

I wish there were time to go into a discussion of Dr. Bissell's paper. I am very much gratified that he

brought us some of the evidences of Dr. Miller's demonstration of the minute lung anatomy. I think it deals with a very practical situation in the study of early tuberculosis. Dr. Dunham insists very much on this fan-shaped demonstration, and I am not so sure but that he is correct. At least it calls out the minute anatomy study.

DR. WILLSON (closing the discussion on his part): I have emphasized the fact that I have shown only slides of cases in which the deformity is clearly apparent and in which diagnosis is easy. Early involvement in these conditions is not so easy of interpretation; and every clinical method available must be used, but there is an appreciable percentage in which the Röntgen finding is the deciding factor. This is especially true in conditions found in the upper half of the stomach.

Malignant cases do not come in early enough. Their histories run back several months or years. Considering this fact, I would state that all malignant conditions in the stomach should be recognizable by Röntgen examination. I have no information which would lead me to believe that I have missed a carcinoma of the stomach.

If we saw these patients when the first symptoms of disease appear we should have more work cut out for us, but as we all have occasional gastric disturbances which usually pass over in a few days or weeks at the most, we must expect more or less procrastination on the part of our patients.

While I am using the Röntgen ray as a diagnostic help, in much the same way that I am using all other practical means to arrive at a correct conclusion, I must admit that it would be the last of my equipment that I would do without. It has become just as much a matter of course to screen my patients as to take a history, use a stethoscope, or make a physical abdominal examination.

In conclusion, I would like to say that I believe a necessary part of any specialist's training is to make him able to interpret his own Röntgen-ray findings. He is the most intimately acquainted with the anatomy, the physiology, and the pathology of the parts under observation; and the correlation of findings would be more complete were he able to do his own interpretation of Röntgen-ray shadows.

DR. MOORE (closing the discussion on his part): I have nothing to add except to congratulate Dr. Willson on his very pithy and conservative presentation.

Dr. Bissell's paper was a very excellent one, and I think too much importance cannot be placed upon what he said about the value of a negative diagnosis. I believe that the most important evidence the röntgenologist can give to the internist is that the lungs in this or that suspected case are not tuberculous.

I think röntgenology is to be congratulated on the plea for conservatism which has been made this morning, particularly with reference to the diagnosis of tuberculosis. It seems that if there is one crime greater than not diagnosing tuberculosis early enough, it is to diagnose it too early; and, certainly, if we flatfootedly tell the patients that they are tuberculous when we do not know it, we have committed a crime for which we shall be held accountable. I think the röntgenologist particularly should see that the diagnoses in the early cases of tuberculosis are checked up by very careful clinical data. Collaboration must be the keystone of success if we are going to do anything for suffering humanity.

DR. BISSELL (closing the discussion on his part): The discussion has been so generous that there is little more for me to add. An incidental remark by Dr. Moore introduces a phase of the subject which I consider an important one. If I correctly understood him, he considers it wrong to inform a patient that he has tuberculosis when the type of the disease is not the old-time progressive consumption. Now, my contention is, that we must recognize other, more concealed, types through our Röntgen studies so that the consulting physician may apply the proper therapeutic measures. Since we are thus insisting upon a new conception of pulmonary tuberculosis, certain educational propaganda becomes necessary, but, when patients learn that tuberculosis does not always mean consumption, they will be helped, rather than injured, by a frank statement of the truth.

Perhaps it would simplify matters, if we had a nomenclature with a special name for each type of the disease, even though the etiologic factor is the same. By means of the stereoröntgenogram, properly interpreted, it should be possible to differentiate these various types, classifying a given infection as latent, concealed, or progressive tuberculosis. It is better that cases of the former type should be recognized as tuberculosis, and treated as such, than that they should be allowed to drift about as hopeless neurasthenics.

PYLOROSPASM IN INFANTS*

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Pylorospasm and pyloric stenosis have been the subject of a great deal of discussion and theorizing. There are still, however, very sharp differences of opinions concerning the pathogenesis and therapy of the condition. I shall endeavor, so far as possible, to keep the theoretical discus-

sion from this paper, and shall try to base what I have to say upon personal observations.

This condition was first brought to the attention of the profession by a very clear description of "Congenital Hypertrophic Stenosis of the Pylorus," which was published by Dr. Hezekiah Beardsley, of New Haven, Conn., in 1788. Beardsley succeeded in performing an autopsy

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

upon the case in spite, as he says, of the fact that

The impatience of the people who had collected for the funeral prevented so thorough an examination of the body as might otherwise have been made. The pylorus was inverted with a hard compact substance, or schirrosity, which so completely obstructed the passage into the duodenum, as to admit with the greatest difficulty the finest fluid; whether this was the original disorder, or only a consequence, may perhaps be a question.

In this last phrase of the first report we find a shrewd forerunner of the question which is still under discussion.

The malformations and connective-tissue stenoses or atresias should not be confused with this condition, as the vomiting and other symptoms of atresia appear very soon after birth. There is a typical specimen of such a case of congenital atresia, which I saw in consultation with Dr. Lewis Dunn, in the Museum of Pathology of the University of Minnesota.

The clinical picture of the condition under discussion is usually as follows: The infant is seemingly normal at birth and may even be larger than the average child. Vomiting usually begins, without apparent cause, even with the child on breast-feeding during the second or third week. The vomiting increases rapidly in frequency and force and the ordinary therapeutic measures do not have the desired effect. The vomiting is frequently projectile in character, and the vomitus does not contain bile. The stools become small in quantity and very infrequent. The body-weight sinks rapidly, and the loss of weight may reach an extreme degree.

The examination of the abdomen often shows a marked contrast between its sunken lower half and prominent portion in the gastric region. The wall of the abdomen is often so thin that the outline of the stomach can be plainly made out, and its lower margin may at times be outlined below the normal level. The characteristic peristaltic waves can be seen passing usually from left to right. The height of the waves is often very striking. The thickened pylorus may at times be palpated.

The *x*-ray examination has proved of definite value in our cases. Many cases with typical symptoms may be shown to have a patent pylorus. In fact some of our cases have shown that a portion of the bismuth or barium salt may pass through the pylorus within a very few minutes. In some of the more severe cases, however, the passage of the pylorus can be shown to be defi-

nately delayed. The *x*-ray examination should therefore be carried out in every case in which there is doubt, and the findings should be carefully considered in the prognosis and outlining of the treatment as will be pointed out later.

Intentionally avoiding the theoretical discussion, for which those who wish to follow the subject further may be referred for the literature to Ibrahim's¹ comprehensive article in *Die Ergebnisse der inneren Medizin und Kinderheilkunde* and Scudder's² article in the *Annals of Surgery*, I shall turn at once to the discussion of our own cases.

My private records show forty-six such diagnoses. A considerable portion of these cases were milder, and yielded to internal treatment with comparative promptness. Such cases rarely reach the surgeon unless incorrectly treated, and therefore they are a cause of a great deal of the confusion in the literature. The cases which the surgeon sees do not represent the whole picture.

Of these forty-six patients two died. The first one at the time of my first examination was already in an extreme condition, and I believe would have died either with or without operative procedure. Post-mortem examination disclosed a definite pyloric enlargement largely composed of muscular tissue. The other death followed operation, but was not, I believe, due to the operation, as the child improved definitely after the Ramsted operation, performed by Dr. Abbott on June 14, 1916, and retained its food. Twelve days later the babe became suddenly tympanitic, had fecal vomiting, and a second operation showed a small volvulus with the upper portion of the small intestine dilated and the portion below collapsed. The child died the same day, and the post-mortem examination showed a patent pylorus, which admitted a tube with a 0.75 cm. diameter.

Of these forty-six patients, two were operated upon, with one death, just described. The other patient was operated on by Dr. Archibald Wilcox on March 20, 1912, who performed a gastro-enterostomy. She recovered promptly, and is now apparently well. This last child is of especial interest in that when I saw her first she was eighteen months old and weighed but 6,170 gms., approximately the normal weight of a five-months-old child.

It is sometimes justly stated that the high mortality in the hands of some operators is due to the fact that operation was delayed too long. This is not the case in this series, as in the one

case which recovered the operation was put off until the child was eighteen months old, and the child that died rallied and improved after operation, and died twelve days later of volvulus.

We have left, therefore, forty-four cases treated without operation with one death. This child, as stated above, was in such extremely poor condition when first seen that I believe it would have died either with or without operation.

Many of these forty-four cases were of the severest type, a few of which I shall outline:

Baby K. was eight weeks old when first seen, Nov. 26, 1915. It weighed 2,100 gms., or about two-thirds of the usual birth-weight. Operation was considered, but not performed. Three days later it weighed 2,700 gms. Forty days later, Jan. 5, it still weighed 2,700 gms. Three months later, March 1, it weighed 3,300 gms. Four months later, April 1, it weighed 3,450 gms. It recovered completely.

Baby G. was five and one-half weeks old when first seen, October 6, 1915. It weighed 3,850 gms. On November 16, 1915, it weighed 3,500 gms. On December 15, 1915, it still weighed 3,500 gms. On January 10, 1916, it weighed 3,950 gms.

It improved steadily from that time until there was complete recovery. This was a physician's child, and was brought to me on the second date, November 16, with the intention of having it operated on.

Baby P. was brought to us as the parents had been told by a surgeon that there was no hope without operation. It recovered completely.

Treatment.—Breast-milk should be given in every case. It can always be obtained, and every severe case in this series received it. Buttermilk and buttermilk mixtures are valuable adjuvants.

Dehydration must be avoided. This can be accomplished by enteroclysis, hypodermoclysis, and tube-feeding. Baby K. entered the hospital dehydrated, weighing 2,100 gms. After two and one-half days it weighed 2,700 gms., having gained 600 gms., or 20 ounces. This was accomplished by enteroclysis and tube-feeding.

External heat must be carefully used. The heat-regulation of these infants is often very poor.

Gastric lavage was found to be of definite value, especially when followed by gavage. Longer intervals of feeding (three- and even four-hour intervals) gave the best results. At times chloral hydrate by rectum in large doses was of decided value. Stimulation, usually camphor given hypodermically, tides the infant over at times. Efficient nursing is absolutely necessary in severe cases.

Ibrahim has summed the question of operation up as follows:

1. Many cases may be cured by operation, and remain well.

2. Not only those which are to be considered as pure spasm, but also those with the most severe clinical picture which show also upon autopsy later that there is genuine hypertrophy, may frequently be cured by internal treatment and remain well.

3. It is absolutely not necessary, so far as the treatment is concerned, to make a definite distinction. The palpability of the pylorus, which is so often considered a criterion, cannot be used as an indication for operation. I have collected twenty-nine cases in which the tumor of the pylorus was palpated distinctly and yet they recovered completely by internal treatment.

Ibrahim has collected the following statistics:

Mortality of all cases treated internally (232), 46.1 per cent.

Mortality of those in Germany treated internally (83), 22.9 per cent.

Mortality of Heubner's cases treated internally (21), 9.5 per cent.

Mortality of all operative cases (138), 54.3 per cent.

Scudder's report included seventeen cases upon which he operated with three deaths, a mortality of 17.6 per cent.

In conclusion, operative treatment under the very best conditions gives a low mortality. Operative treatment under unfavorable conditions gives a very high mortality. Internal treatment under the best conditions gives a lower mortality. Internal treatment under improper conditions gives a high mortality. Proper internal treatment supported by proper operative treatment in selected cases gives the lowest mortality. The later results in cases under internal treatment, as well as operative treatment, are excellent.

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DISCUSSION

DR. JAMES T. CHRISTISON (St. Paul): Dr. Sedgwick's paper might, I think, be called a plea for the non-operative treatment of pyloric stenosis or pylorospasm. My own feeling in the matter is entirely in accord with what Dr. Sedgwick has said. I have had two patients who were operated on, one died, and the other did not.

I think, with Dr. Sedgwick, that we can save quite as many of these children without operation as we can with it; but I am glad to know that Dr. Sedgwick thinks they should have breast milk. He followed this statement by saying, "if you can always get it." You can, but how many of you are going to take the trouble? How many of you will drive around to places where you know there are women who are kindly disposed and who will give you the excess milk they happen to have for the purpose of giving it to a baby with pylorospasm? Not very many.

That is one of the functions of the pediatricist (laughter), and we are doing it all the time. I am quite sure that the tendency among pediatricians is to get away from operative procedures in cases of this kind.

One of the things Dr. Sedgwick did not mention is the desirability of feeding the child through a tube. Do not let them swallow their food. There is something about the reflex irritability that is set up as a result of the swallowing activity that causes active vomiting, and those of us who are seeing these cases constantly might cite case after case. We are told that it is impossible for a child to recover if it loses more than one-third of its birth-weight. I have under observation in one of the hospitals in St. Paul a child which, according to the hospital record, weighed five pounds and four ounces on admission, while its weight at birth was seven pounds and six ounces. It is gaining every day along the line of treatment advocated by Dr. Sedgwick.

I would like to emphasize this one fact, that you can, if you will, no matter what your district or neighborhood is, get breast milk and feed it to these children through a tube. After washing their stomachs you can overcome the loss of water by enteroclysis and get better results, if you will only take the trouble, than you can by operative procedure.

DR. F. W. SCHLUTZ (Minneapolis): I heartily endorse what Dr. Sedgwick has said with regard to the outcome of medical treatment in these cases, but, after all, there are some patients that die. We all lose a patient occasionally, and the one or two that we do lose are the ones of interest to the surgeon. The question arises whether or not there was any time in the career of a given patient when surgical procedure should have been seriously considered, and in my own limited experience the one important feature to consider was that referred to by Dr. Christison regarding the weight of the child. It is a well-known fact in pediatrics, which is borne out by clinical experience, that, if a child gets down to the point where it weighs only two-thirds of its initial weight, the child is practically lost. It seems to me, it is a wise plan to follow the treatment which has been outlined by Dr. Sedgwick, which is the best we know of at the present time. If that fails to hold the child's weight to such an extent that it by degrees only approaches a dangerous figure, I think that before it reaches that point we should consider seriously the idea of turning the case over to a surgeon, because, if we wait until that figure has been reached, it is quite useless to turn the case over. You cannot blame any man for refusing to operate, as these are the cases that are usually attended with fatal results.

I had not long ago a patient that came to me in such a condition that it was really below the dangerous figure, and I had no idea the child would recover. The child lived, I think, forty-four days and, at all times, was in such a precarious condition that I did not feel that it should be turned over to a surgeon. At any rate, the surgeon refused to operate. The child gradually got down in weight below the lowest figure when it came, and kept on going down, but finally recovered without operation. Such a

case is quite hopeless. If there is anything that should be the determining factor as to whether we should turn a case of this kind over to a surgeon, it would be kept under the close observation of the body-weight after trying all methods of feeding we know of.

I would like to corroborate the experience of Dr. Christison in feeding these children through a tube. Many cases of pylorospasm do well. The majority of them do well, but it has been a common experience with most of us that it is a difficult matter to keep these children nursing at the breast. The sucking action has a marked effect upon the reflex action of the stomach and increases vomiting. Sometimes the mere removal of the child from the breast and giving breast milk, expressed and cold, is the thing which gives brilliant results in a short time.

DR. WARREN A. DENNIS (St. Paul): The only cases of pylorospasm in which I have operated have been referred to me by pediatricists. We have had five of these cases, with three straight recoveries and two deaths. In the cases that died the deaths were due to the fact that the children had been losing for a considerable time, and delay in operating was due to procrastination on the part of the parents. Parents are naturally loth to have their babies operated on, hence they put off operation until the child is a bad risk.

DR. R. E. FARR (Minneapolis): Dr. Sedgwick's paper brings up a very important matter. His paper is timely and is of great aid to us in these cases. I believe, however, his statistics comparing medical and surgical treatment are somewhat misleading for the reason that the two methods are carried out upon entirely different classes of patients. The work of Richter of Chicago and that of several others would seem to show that the results from surgical treatment are pretty good, possibly because cases are now referred earlier to the surgeon. Furthermore, it would seem that recently medical treatment is so successful that in the future there will be very little reason for surgical treatment. Still there are some cases in which operation is imperative, and most of these patients are brought to the surgeon *in extremis*. They rarely ever come to operation until the pediatricist has given them up, and that is a very hard tax upon surgical treatment.

I wish to suggest again, as I did yesterday, the use of local anesthesia in these cases because, without restraint and with no harm to the baby, the abdominal wall may be infiltrated with novocain, and after incision the distended stomach will lie outside of the abdomen, allowing the surgeon to cut down and do any necessary operation with the least possible harm to the patient.

DR. E. J. HUENEKENS (Minneapolis): I agree with Dr. Sedgwick about the importance of internal treatment as opposed to surgical intervention. In the severest cases gavage is necessary, but in the less severe types I have had very good results from the so-called Ibrilim treatment. The babies are fed on expressed breast milk, sometimes cold and as often as every two hours, if necessary. I often get good results with one or two feedings of a fat-

free artificial food, but the main diet should be breast milk.

As to the use of medicines in this condition: In many cases I have had good results from a one per cent novocain solution given internally.

DR. O. W. ROWE (Duluth): I have seen some twenty of these cases. All have been treated medically with satisfactory results with one exception. The parents of the exception wished an operation and had a posterior gastro-enterostomy performed. It did fairly well, but not better than the average case treated medically. My experience, therefore, would teach me to treat all cases medically unless it was definitely determined, after a fair trial, that success could not be expected by this mode of treatment. I am inclined to think there will be fewer operations for this condition in the future.

In my early experiences, I attempted to determine whether an operation was necessary or not by classifying these cases as pyloric spasm or pyloric stenosis hypertrophica. This was of no help because a severe pylorospasm might present a more unfavorable prognosis than a mild degree of stenosis.

My feeding intervals may have been longer than those described by Dr. Sedgwick, and I believe that I have had results from atropin. If this drug is used it must be given in sufficient doses to produce its physiologic effect.

While only one of my patients has been operated on I saw a number of post-operative cases in an eastern clinic. What impressed me most in those cases was that, while the trouble with the pylorus was corrected, there was another condition remaining which might be just as serious and just as difficult to treat, namely, atrophy.

DR. MAX SEHAM (Minneapolis): The cases in which I have seen operation for hypertrophic stenosis of the pylorus have been quite different from the cases described as pylorospasm by the speaker. In these cases the condition found at operation was quite uniform. A palpable tumor, cartilaginous, about the size of an almond, could be felt. The symptoms in the five cases in which I have seen operations done, were such as to cause almost complete obstruction. A catheter, No. 15 French, could be passed through the pylorus.

Hess, who has done considerable work along this line, claims that if a No. 15 French catheter can be passed through the pylorus, an operation is not indicated. This seems to be a reasonable way of dividing cases into operable and non-operable.

DR. SEDGWICK (closing): While I appreciate very much this discussion, I should like to have heard more from the surgical side.

I am glad Dr. Christison brought out more sharply the question of tube feeding. When I spoke of gavage I meant that we use a tube in feeding these cases.

In regard to the time of operation: I have several patients that have gone to the point of losing one-third of their weight, and they have gone even

further and come out very well. Dr. Christison has had the same experience as others in this regard.

Dr. Dennis reported certain cases which showed a high mortality following operation, which we find when the children have not had the advantage of proper internal treatment. Many of the surgical cases are of that character, and that is why I said in my summary the best procedure in my estimation is internal treatment, and in a few selected cases operation should be done.

Dr. Farr spoke of Richter's results following operation. He had only ten cases I think.

DR. FARR: He has had more than twenty patients on whom he has operated.

DR. SEDGWICK: I cited Scudder's cases. There were seventeen cases, and Strauss of Chicago has got excellent results from operative intervention. The surgeons here are getting excellent results in proper cases.

As to feeding these patients a fat-free preparation: I had that in mind when I spoke of the use of buttermilk and of buttermilk mixtures. Ibrahim has thought that splitting of the fat in the stomach is a factor. What the pathogenesis is, I will not say, for I do not know. I have intentionally avoided the subject. There are many interesting points in the pathology of this condition, but we have not time to consider them.

Dr. Rowe spoke of feeding at longer intervals. I have used longer intervals with good results. I spoke of feeding at three- or four-hour intervals, but four- or five-hour intervals are valuable in many cases. I think Dr. Rowe brought out one point which is important, namely, after the surgeon has operated he has a pediatric condition left which is definite, that is, atrophy. After we overcome the vomiting by the internal treatment, we have also the atrophy to combat. Whether you use operative or non-operative treatment, you have this definite condition, which makes it difficult for the child to take care of food of any character, which is a very serious problem, and that is one reason why these patients should have all breast milk. Before the operation the child also needs very definite feeding treatment.

I did not make the seventy-five hundredths of a centimeter point clear. That was in a patient that had been operated on twice, and therefore the surgeons should be credited with a good result as far as the lumen was concerned.

The Hess catheter is of very great value in pediatrics. I have used it a great many times. You can pass a catheter into the duodenum of the infant with a little practice very easily. If the obstruction is pronounced, the catheter will tend to aid you in your diagnosis. I am not taking an extreme position that none of these patients should be operated on; I am taking the position that the mortality is low with proper internal treatment, and operation should be reserved for those patients that have had proper internal treatment and where it is not considered advisable to go on.

TUBERCULOSIS AND THE WAR*

BY PAUL L. BENJAMIN

Secretary of the Anti-Tuberculosis Committee of the Associated Charities

MINNEAPOLIS

One of the most serious problems confronting the warring countries in Europe is that of tuberculosis. It is true that every great war has had some such great scourge as typhus, typhoid fever, smallpox, malaria, and other diseases; and it looks now as if the white plague would fill that toll in this war. The present methods of warfare are new and startling. In our Civil War the troops lived more or less a rugged and healthy outdoor life; they were repeatedly on the march, and were living continuously in the open. On the other hand, the troops in Europe are living like moles. Their method of living is most unhygienic. Water is forever present in the trenches, and the dugouts are conducive to disease.

It was, however, not until France was menaced by tuberculosis only second to the forces of the German arms that she came to a realization of the situation. Investigations made by Dr. Hermann M. Biggs, Health Commissioner of the State of New York, upon invitation of the French Government, have shown that the situation is startling. After an intensive survey he found that up to February last 150,000 troops had been discharged from the French army with active tuberculosis; that there were 500,000 cases among the civilian population; and that a very large percentage of the returned prisoners and civilians had the disease. He found, for instance, that the death-rate in Havre last year was more than three times that of New York City, this death-rate alone being equal to 40 per cent of the total death-rate from all causes in New York City. The death-rate in New York City from tuberculosis is only about 1.5 per 1,000 of the population, and even England's death-rate was only 1 per 1,000.

Some of the causes for this serious situation in France are not far to be found. Before the war there were only 1,000 beds in the country for tuberculosis, and these were private ones. Even the sanitary authorities had not taken official cognizance of the disease, and notification was not required, and is not even at the present time. There were no provisions for institutional care, and there were very few dispensaries. Added to this is the well-known aversion of the French people to fresh air, together with the

rapid mobilization with little opportunity for thorough examinations.

In contrast to this situation is that of England. Tuberculosis did not cause very serious results among the troops there. The reasons for this lie partly in the fact that for years she has carried on an intensive campaign along the most accepted lines, looking toward the eradication and prevention of the disease. Experience of these two countries answers those carping critics who have decried the methods being used by antituberculosis and other agencies that have been working to control the disease. On one hand, you see the effective result of the work of these organizations; and, on the other, the disastrous results of no organized work.

Medical authorities agree that the United States should take immediate steps to prevent a similar catastrophe happening in this country. It might be well in this respect to follow the experience of England. The first year of the war all the trades, especially that of the manufacturer of munitions, were speeded up. Factory laws safeguarding the health of the workers were broken down. Not only was there over-time work, but also seven days of it a week. England soon awoke to the fact, that, instead of increasing output she was having an actual decrease. This led to the passage of the "Munitions of War Act," of July, 1915. This law provided for the health of the workers along the following lines:

1. The prevention of occupational diseases and poisonings.
2. The sanitation of work-places.
3. The prevention of undue fatigue.
4. The medical supervision of workers.
5. The sanitation of industrial communities.

In this connection Surgeon J. W. Schereschewsky, of the United States Public Health Service, points out that, viewed alone from the necessity of increasing the output of munitions, it is essential to standardize factory illumination in order that visual ease and comfort of the workers may be provided and glare may be avoided.

He states, "that an abundant supply of fresh air is a necessity for workers is, of course, conceded by all; but, in order to prevent listlessness and inability to concentrate the attention, and generally to maintain production at a high level,

the physiological stimulus of the air supply must also be considered."

Especially important in the question of the health of the workers is the prevention of undue fatigue. The health of munition workers committee has found that one day's rest in seven is a vital necessity, and that for men the maximum weekly hours of labor cannot exceed 56 for heavy labor without causing undue fatigue; for moderately heavy labor, 60; and for light labor, 64. The maximum for women is less.

Such safeguarding of labor will play an important rôle in the tuberculosis problem. But more specifically are the recommendations of the National Association for the Study and Prevention of Tuberculosis.

The Association recommends the enlistment by the Council of National Defense of the best available tuberculosis experts and agencies in the country for the following specific purposes:

1. "To make under the command of a ranking medical officer of the army corps repeated routine examinations and observation of recruits while in training- and mobilization-camps for the purpose of detecting any obscure tuberculous lesions.

2. "To utilize and enlarge the existing sanatoria and hospitals of our country so that all cases of tuberculosis arising in our forces may be adequately cared for as near as possible to their own homes.

3. "To work out in coöperation with existing health authorities a definite, comprehensive, and constructive program for adequate prevention and control of tuberculosis among the whole population."

This situation should lead to a keying up of all public-health campaigns, especially a renewed activity in the campaign against tuberculosis, not only to prevent disastrous results among the troops, but also to decrease further the death-rate among the civilian population. It may also bring about the adoption of some of the measures which have been advocated by antituberculosis workers for years,—adequate hospital accommodation for the sick, medical examination of employes, health insurance, open-air schools, preventoria, housing legislation, increased appropriation for public-health work, better sanitary conditions in working-places, etc.

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A SIMPLE METHOD OF REMOVING FOREIGN BODIES*

BY HAROLD W. STONE, M. D.

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In the past year or two many articles have appeared in the medical and surgical journals of this country, dealing with some phase of military surgery and its development as observed in the military hospitals on the west front. Not a few of these articles have dealt with the localization of foreign bodies.

The method which was used in Dr. Joseph Blake's service in the American Ambulance appealed to me as being much simpler and far better, within certain clearly defined limits, than any other that I have seen used or described. As I have not seen a description of this method in any of the journals, and have not spoken with any one in this country who was familiar with it, it has occurred to me that a brief description of it

may be of interest at this time, no matter how imperfect such description.

The method consists, in brief, of a large electric coil, constructed, I believe, on the same general principle of the induction coil. It weighs several kilos, and is mounted on a platform with wheels, being so pivoted and counterpoised as to be readily adjustable. It is attachable to any ordinary electric-light socket.

This coil or "electro-vibreur" has the power of inducing sympathetic vibrations in any magnetizable substance brought near it.

When used in the operating-room, the patient is brought in on a rubber-tired truck, having wood in place of metal for a top so that the patient is properly insulated from the truck and floor. The induction end of the "vibreur" is then

brought to within 3 to 4 cm. of the entrance of the wound, and the flat of the hand is placed over this region. If the foreign body is in this general region, a very distinct sympathetic vibration will be transmitted from it through the flesh to the hand. The area of *maximum* vibration, possibly a space of 1 to 2 cm., depending somewhat on the size and depth of the fragment, will contain the fragment. An incision is then made, and, as the incision is deepened, its course is or can be corrected again by noting the point of maximum vibration obtained by the "vibreur" in the wound.

This method is used chiefly, if not solely, in the

removed by anyone possessing a little mechanical ability.

If the operator can feel the sympathetic vibration before operating he can go ahead with the absolute certainty of being able to remove the fragment without any needless probing, exploration, or risk of being accused of prestidigitation.

Sympathetic vibration can be elicited from a fragment at any depth providing it is not imbedded in or adherent to the bone. The point at which the maximum vibration is obtained is the point at which the fragment is nearest the surface. I have elicited vibrations from fragments imbedded in the quadratus lumborum muscles,



Showing shell fragments in a wound.

removal of shell fragments. It is generally used in connection with the x-ray, but not necessarily. It is naturally ineffective in removing any foreign bodies which are not magnetizable, such as copper-coated bullets, aluminum shell-noses, etc. But bullets are more apt to penetrate than to lodge, aluminum on account of its lightness having very little penetrating power, and shrapnel with its leaden pellets being no longer used.

The great bulk of foreign bodies requiring removal are from the iron shell-casings and hand grenades, and are frequently not only fragmented but are actually pulverized. To localize these fragments properly, as should be done in order to remove them with a minimum of trauma to the tissues, is not a work that the busy röntgenologists will undertake without protest; but by the use of the "vibreur" these can be easily re-

moved from a metal button driven deep into the buttock.

The illustration is fairly typical of the foreign-body work done at the ambulance. Many of these shell fragments, of course, would not need to be removed, but many have carried in particles of clothing and other infective material and the drainage from such a wound is, in many cases, almost hopelessly prolonged unless the bulk of the infective material is removed. This can be done properly only with the assistance of the "vibreur."

I regret that I am unable to give a scientific and more detailed description of this apparatus. In this country where most of the foreign bodies are lead bullets, glass, etc., which are usually not multiple and are infrequent enough to be interesting, there is little need for such apparatus. It

was developed in France, and, to my mind, is a nearly indispensable apparatus for any well-equipped military hospital.

SUMMARY

1. It will enable the surgeon to discover any magnetizable foreign body with certainty and without any probing or unnecessary trauma, which is of importance in an infected or granulating wound or near large blood-vessels or nerves.

2. It is painless for the patient, and calls for less manipulation than is necessary in taking an x-ray plate or in doing fluoroscopic work.

3. It is practically inexpensive, both as to its original cost and in operation.

4. It can be operated by anyone, and no previous training or experience is necessary.

5. It is applicable to any portion of the body.

6. A good deal of x-ray work can be replaced by the "vibreux," resulting in a considerable economy of time and money and helping to eliminate many cases of x-ray dermatitis, which is a not infrequent complication of the x-ray in the hands of untrained men working on tissues, the vitality of which may be seriously lowered.

ANGIOMA AND RADIUM*

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The specific action of radium on vascular tissues has been known since it was first used for therapeutic purposes. Striking results from this treatment of angioma have been reported in the literature both in this country and in France. Small quantities of radium used in the treatment of superficial angiomas or purplish birthmarks bleach out the condition, and leave the skin almost normal in appearance. But in the treatment of this type of lesions extreme care is required, or a whitish, disfiguring scar is produced. Such superficial conditions are best treated by a small plaque of radium kept constantly moving over the involved area, so that the effect of the radium will be distributed evenly over it.

Large cavernous angiomas often seen about the face and scalp in children require larger quantities of radium. It may be used in the form of a plaque or tube properly screened and elevated from the tumor. When emanations are available they may be employed. A preferable method of treating such conditions, however, is to place a tube of radium in a rubber finger-cot, and insert it directly into the tumor. In using this method in cavernous angiomas about the lips and cheeks in children ether anesthesia should be given. A small incision should then be made inside the mouth a short distance from the angioma, and the radium inserted directly into the tumor through a channel burrowed with a small straight forceps. The incision is closed with catgut. When the work is done entirely on the inside of the mouth there is no visible scarring

and no deformity of the skin. The tumor disappears, leaving a normal condition. In young children, particularly, such a method is preferable, as the radium is placed where it is needed, and kept there the necessary length of time. It is well to wait two or three months between treatments so that the full value of the radium may be seen before further treatments are given. Angiomas in young children particularly, respond readily, but many remarkable results are seen in adults.

Extensive cavernous angiomas about the tongue and the floor of the mouth, involving the submental and submaxillary regions, are best treated by the cross-firing method from the inside of the mouth and the outside of the neck. In this way many conditions that are hopeless from a surgical standpoint are cleared up.

The following cases are illustrations of the use of radium in angiomas:

CASE 1 (111960).—H. A. C., a child aged 5 months, was brought to the Clinic August 3, 1914, because of an angioma on the right side of the face. The tumor was noticed at birth, but its color had deepened, and it had grown larger; otherwise the child appeared to be quite normal. Two treatments with the electric needle had been given six weeks previously. The right side of the face, extending from above the right brow and including the entire right cheek, was larger than the left and appeared swollen. On the right cheek was a dark-purplish superficial angioma (Fig. 1). Five deep injections of hot water at intervals of six weeks to three months were given for the cavernous angioma. A 5-mg. plaque of radium covered with a finger-cot was applied over the entire area of the superficial angioma two different times, for six and six and one-half hours, respectively, with an interval of three months between

*Submitted for publication May 5, 1917.



Fig. 1 (111960). Cavernous and superficial angioma of the cheek.



Fig. 2 (111960). Same as Fig. 1. Six months after treatment.

treatments. The second photograph (Fig. 2) was taken February 14, 1915, six months after the beginning of the treatment. The cavernous part of the angioma had entirely disappeared, as had also the superficial angioma. While in this case hot-water injections were given for the cavernous part of the condition, we have found in a series of cases that radium gives much better results. Fewer treatments are required, and they are less painful.

CASE 2 (118722).—K. F., a child aged 9 months, with a tumor of the left cheek, which bulged to the side of the nose and upper lip, was examined in the Clinic November 11, 1914. The tumor was noticed one week after birth. Five operations from the outside of the

cheek had been done in attempts to reduce the tumor, without success. The tumor continued to grow larger. The first operation was done when the child was 11 weeks old. Examination showed a large cavernous angioma of the left cheek, which was much scarred from the operations (Fig. 3). Four radium treatments were given between April 1, 1915, and August 4, 1916, a 25-mg. tube of radium in a finger-cot being inserted directly into the tumor in four different locations over the face. In addition, a 5-mg. plaque of radium screened with a finger-cot was used in two treatments. It was kept moving over the tumor, one time for four hours and the other time for eight hours. The photograph



Fig. 3 (118722). Extensive cavernous angioma of the left cheek, involving the nose, inner canthus, and upper lip. Scarring from previous operations.



Fig. 4 (118722). After treatment with radium, scarring the result of previous operations.



Fig. 5 (150124). Cavernous angioma of the upper lip and the nose.



Fig. 6 (150124). Same as Fig. 5. Seven months after one treatment with radium.

(Fig. 4), taken March 29, 1917, shows the result of the treatments. The scarring on the outside of the cheek is due to five operations. This scarring is now being treated.

CASE 3 (150124).—L. S., a child aged $4\frac{1}{2}$ months, with a large cavernous angioma involving the entire upper lip and the lower part of the nose, was examined in the Clinic January 18, 1916. The growth was noticed three or four days after birth, but it had gradually

increased in size. The child had not been treated. There was superficial ulceration and crusting on the center of the lip (Fig. 5). On Jan. 21, 1916, a 25-mg. tube of radium in a rubber finger-cot was inserted into the tumor of the upper lip from the inside, and left in place twelve hours. The child was not seen again until August 26, 1916, seven months later. The condition at that time is shown in Fig. 6.

CASE 4 (176169).—J. S., a child aged 4 months, was



Fig. 7 (176169). Cavernous angioma of the upper lip and the nose. Child also has marked eczema.



Fig. 8 (176169). After treatment with radium.



Fig. 9 (176169). Same as Fig. 7. Side view.



Fig. 10 (176169). Same as Fig. 9. After treatment.

brought to the Clinic October 24, 1916, because of angioma of the upper lip. The tumor was noticed at birth, and had been increasing in size. It had been treated by injections of alcohol once a week for six consecutive weeks with no improvement. The examination showed a large cavernous angioma involving the entire length of the upper lip, and bulging the lower part of the nose. The lip was one inch thick in the center. There was also a marked eczema on the face and scalp (Figs. 7 and 9). On October 26, 1916, a 25-mg. tube of radium in a rubber finger-cot was inserted into the inside of the upper lip, and left in place eight hours. The child was brought back on February 1, 1917, with the lip 75 per cent better than when first

examined. A 22-mg. tube of radium was again inserted into the inside of the lip, and left in place for eight hours. When next examined, April 10, 1917, the lip was quite normal (Figs. 8 and 10).

The use of radium in the treatment of angioma is very satisfactory. This is especially gratifying since surgical measures are of little value. The condition usually recurs following any operative procedure, and the scarring that results is disfiguring (Fig. 4). In my experience angiomas have not recurred following their removal with radium.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

JULY 1, 1917

A NEW MAYO PLAN

From sources which are more or less authentic and from information which was first published in the *Daily News* of St. Paul, June 21, it seems quite likely that the opposition to the Mayo affiliation may cease, if a new plan soon to be offered is accepted by the Board of Regents. THE JOURNAL-LANCET has not been able fully to verify the information concerning this matter, but enough has been said to make it proper to publish the new proposal. The suggestions as printed in the *St. Paul Daily News*, and which purport to be those submitted to the Regents, are as follows:

First—That the Mayo trustees be abolished, and the \$1,500,000 fund be placed in the hands of the Regents directly.

Second—That the agreement be for a period of twenty-five years, and not in perpetuity, as hitherto proposed.

Third—That arrangement be made giving the University wider power in the expenditure of the earnings from the fund of the Foundation.

The proposal to abolish the original trustees who reside in Rochester, and to turn over to the Regents the income of \$1,500,000 (now increased to \$1,750,000) and to make the period

for twenty-five years, rather than a perpetual period as planned previously, puts the affiliation in a somewhat different light. The new plan will be unobjectionable to very many who strenuously opposed the old one. It shows a liberal and generous attitude of the Mayos toward the State, and their willingness to do what is right in the disposition of their own funds for the benefit of the State. The new plan both eliminates many objections, and objectors, and puts the Mayo Clinic into the University.

However the fund may be dispensed, the solution of this momentous problem and even a partial removal of the objections to the old plan will be of benefit, not only to the State, but to the men in the Mayo firm who control the Clinic and the Foundation. The new proposal will create an entirely different atmosphere, and will put the Mayos on a pedestal that will stand forever as a monument to their work.

Quite naturally, the Mayos will consult with the Regents, and the disposition of the funds will be made favorable to the Mayos. Certainly, no one can object to any fair compromise under the circumstances, and in all probability the Medical School will receive still larger sums of money and more assistance from the Mayo Clinic, and will give it a chance to gain the goodwill of the entire profession. This very generous offer coming now, particularly during the war period when doctors are enlisting and are difficult to secure, tends to remove a great burden from the Medical School, as well as from the Mayo Clinic.

If our present information is at all reliable, THE JOURNAL-LANCET offers its heartiest congratulations to the Mayo Brothers for their generous and liberal proposals, and for both the magnificent money endowment and the unparalleled opportunities to continue the medical research and graduate work of the Medical Department of the State University.

We sincerely hope the new plan will be unobjectionable.

POLIOMYELITIS CLINICS

The Minnesota State Board of Health, through its unit, is holding a daily clinic at Millard Hall, on the University Campus, for cases of poliomyelitis. The unit consists of two orthopedists, Dr. Gillette, of St. Paul, and Dr. Geist, of Minneapolis; Mrs. Greene, the wife of a Harvard professor in engineering; and two other trained nurses. Mrs. Greene is a trained and

experienced nurse, and deals with the muscle-testing in poliomyelitis, and is able to direct muscle-movements and exercises. These clinics are given daily. Mrs. Greene has a class of nurses under training between 9 and 10 o'clock each morning. These nurses are educated in muscles, and their attachments, their uses, and their relation to spinal-cord segments. There are recitations; and a review of the clinic is gone over every morning.

At ten o'clock the real clinic opens, and the patients arrive. These patients are examined carefully. The nurses are instructed about the after-care of the paralyzed limbs, a general history is taken, and the patients will be followed up by this unit. This clinic lasts until one o'clock, re-convenes at two, and continues until four. On the first day nearly forty patients put in an appearance; on the second day, about twenty-seven; and on the third day a smaller number. In all, about seventy cases in the first four days were examined, treated, and directed by this unit.

This same unit, or some trained workers composing a new unit, are to be sent out through the state to hold clinics at various places to be designated later, so that the physicians in the country and the people in the country who have poliomyelitis cases in their own homes, can easily reach someone who knows what to do and how to direct them in the care of their paralyzed children. It is planned, also, to have a special clinic in the assembly-room of the Hennepin County Medical Society in the Donaldson Building, and in the rooms of the Ramsey County Medical Society in the Lowry Building some afternoon, so that the medical men in these buildings and nearby buildings may readily join the clinic.

If there are calls for clinics in other places, they will be held.

No operations are performed at these clinics, and no charges are made for the examination of patients or for the advice given to parents and physicians.

The real object of this notice, however, is not simply to describe the methods, but to urge physicians in the cities and over the state to take advantage of their opportunities to attend the clinics, and also to see that patients are sent there, preferably accompanied by the family physician. This is an experience that one does not appreciate until he has an opportunity of going over the ground. Now that there is so much written

and known of poliomyelitis it is just as well that every man contribute his share in attendance, at least at the clinics, and show his willingness to learn the latest methods in the immediate care and the after-care of these cases.

Thus far, the greatly dreaded epidemic of poliomyelitis has not appeared in Minnesota. Fifteen cases in all have been reported in the warm season, but the weather is still cool, and it is well known that poliomyelitis cases do not come out until the heat of summer is continuous.

THE WAR AND THE DOCTORS

Just how many men the United States may put into the field in the European war no one can now even guess; but the demand for medical men, both for our own troops and to help our European Allies, is certain to be very large. Provision has been made for raising 500,000 men for the U. S. Army, and this calls for 5,000 physicians. If 2,000,000 men shall be needed, the demand for physicians would be close to the limit of all who can be spared, or even conscripted.

It is not known just how many physicians have volunteered from the three or four states of which the Twin Cities are the center; but the number is small, probably not over three hundred. The men who have volunteered are among the best in the field; and we desire to urge the entire profession to encourage the men best qualified to undertake the work to offer their services.

To be sure, the demands of patriotism, even of humanity, are the first reasons for tendering one's service; yet it is proper that one who answers his country's call should be suitably paid for services necessarily rendered at great personal sacrifice. We are often asked what the compensation for medical men is. We are glad to be able to say that, while it is not large, it is not insignificant.

Most medical men in service rank as majors, captains, or lieutenants. A major draws \$3,000 a year, with 10 per cent extra if he leaves the country, and also \$750 for living expenses if he is not otherwise provided for. A captain draws \$2,400 with a corresponding extra for service abroad, and \$50 a month for living expenses. A lieutenant draws \$2,000, with extras, as above. Surely, this is liberal compensation for one in a service of love and duty and sacrifice.

The Minneapolis Examining Board is especially equipped to give men accessible to the

Twin Cities examination with little or no delay, and the Board will respond to calls at practically all hours, even on Sunday when strictly necessary.

We again urge our readers to give this serious matter the utmost consideration, and especially to inform themselves of the needs of this nation and the world—needs that they alone can satisfy.

THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA CONFERS DEGREES UPON ITS FIRST GRADUATE TEACHING FELLOWS

The Medical School of the University, in common with many other medical schools, has long been conferring the degrees of M. A. and Ph. D. for graduate work, the course leading to these degrees requiring three years of nine months each for the former, and one or two years of a like amount of yearly work for the latter; but the new work is decidedly different. The teaching fellow, to obtain a degree, spends three years of eleven months each in special intensive research work in connection with a certain amount of teaching. His work may be said to be intensive and concentrated, leading to the specialty which is to be his life-work. Moreover, he is a selected man—selected from high-grade applicants by a most vigorous examination, not only as regards his acquirements, but as regards his fitness. His graduate work prepares him to become a high-grade specialist, to do work needed in the profession and by the people.

Degrees were conferred upon three graduate fellows last month, as follows:

Doctor of Science in Neurology upon Henry William Woltmann, who took his B. S. in 1911, and his M. D. in 1913, both from the University of Minnesota. He did his major work in neurology, and his minor in pathology. His thesis was upon "The Brain Changes Associated With Pernicious Anemia."

Doctor of Science in Pediatrics upon Rood Taylor, who took his M. D. in 1910 at the University of Michigan. His major work was in pediatrics, and his minor in chemistry. His thesis was upon "Hunger in Infants."

Doctor of Philosophy in Surgery upon Golden Lewis McWhorter, who received his B. S. in 1911 from the University of Chicago, and his M. D. in 1913 from Rush. His major study was in surgery, and his minor in anatomy. His

thesis was upon "Some Clinical and Experimental Observations in Gastric Acidity."

Doctor of Science in Medicine upon Dr. Ralph Edwin Morris, who received his M. D. in 1902 from the University of Colorado. His major work was in experimental medicine, and his minor in pharmacology. His thesis was upon "The Graphic Recording of Reflexes, Clonus, and Tremors."

The original work of these graduates, leading to their degrees, was of a very high order of merit. Dr. Morris' study of digitalis, in which he showed for the first time the excellence of the Minnesota-grown plant, conferred a real benefit upon the medical profession and upon the State of Minnesota.

The Medical School is to be congratulated upon the work done by its teaching fellows who have the honor of receiving the first diplomas granted for this character of work.

An article by Drs. Morris and Woltmann appears on another page of this issue.

DR. BURNSIDE FOSTER

The editor of THE JOURNAL-LANCET wishes to record his sorrow and regret at the untimely death of Dr. Burnside Foster, so long the editor of the *St. Paul Medical Journal*. Dr. Foster came west many years ago, and located in Minneapolis; and at that time the editor had an intimate personal acquaintance with Dr. Foster, and knew him and his worth. When Dr. Foster decided to move to St. Paul and engage in practice there, he went with the hearty sympathy of the medical profession of Minneapolis, and during the time that he was the editor of the *St. Paul Medical Journal* the friendliest relations were always entertained between the editors of the two journals. Notwithstanding the occasional differences of opinion, editorially speaking, a firm friendship has always been maintained.

Dr. Foster was a very broad-minded man, and he did much to elevate the profession in Minnesota. He was extremely conscientious in his work on the *St. Paul Medical Journal*, and cooperated in every way to further the aims of the medical profession in the Twin Cities and throughout the state. He added much to his fame and reputation by his lectures at the University Medical School, and his history of medicine and his history of quacks of ancient times were a literary achievement. Many of his articles were copied in other journals, and his editorials were referred to often in the most com-

plimentary manner, for Dr. Foster was recognized as able authority, and a clear, clean-cut writer, and a man who thoroughly understood the subjects which he selected for his editorials and medical articles.

NEWS ITEMS

Dr. C. J. Plonske has moved from Minneapolis to Faribault.

Eight nurses have completed the one-year course given by Nopeming Sanatorium.

Dr. I. G. Davis, of Duluth, has associated himself with Dr. E. E. Hall, of Little Falls.

Dr. B. Bottolfson, of Moorhead, has formed a partnership with Dr. O. J. Hagen, also of Moorhead.

Dr. Henrietta P. Miller, supervisor of health in the schools of Cloquet for the last two years, has resumed her practice.

A bronze tablet in memory of the late Dr. Martha D. Ripley, was unveiled at the Maternity Home in Minneapolis last month.

St. Paul claims the honor of giving the largest number of physicians among the cities of Minnesota to the Reserve Corps.

Dr. R. D. Matchan, of Minneapolis, has been taking special work at the New York Post-Graduate Medical School and Hospital.

Dr. W. G. Nuessle, of Lansford, N. D., has taken over the practice of Dr. Bjarne Ravn at Milroy, the latter moving to Windom.

Dr. D. W. Kohler, a recent interne at St. Joseph's Hospital in St. Paul, has formed a partnership with Dr. Tolbert Watson, of Albany.

Dr. A. W. Swedenburg, of Gully, has taken the practice of Dr. J. E. Douglass, of Thief River Falls, who is at Fort Snelling in the Medical Corps.

Medical infant welfare work is carried on during the summer months at Duluth by the Scottish Rite Masons. The work for this year began last month.

The necessity for birth-records is becoming very plain and very urgent in this time of stress; and the absence of a birth certificate should be a discredit to the attending physician.

Dr. David W. Horning, of Minneapolis, died last month at the age of 65. Dr. Horning had practiced in Minneapolis over thirty years, having formerly practiced at Lake City.

Dr. J. M. Northington, a full-time instructor of the Medical School of the University, has become associated with Dr. Corbett in Medical Reserve Work, and is giving all his time to the same.

Dr. Harry E. Sutton, of Cold Spring, has been a matriculate in the New York Post-Graduate Medical School and Hospital for some time. He will locate about the 15th inst. in St. Cloud, and do exclusively eye, ear, nose, and throat work.

St. Barnabas Hospital of Minneapolis graduated a class of twenty-two nurses on June 13. All debts of the hospital have been liquidated by gifts amounting to \$95,000; and, in addition, a fund of \$107,000 has been set aside to erect new buildings.

We cannot report in these columns the names of all the physicians in the Northwest who have joined the Reserve Corps, but we hope to obtain permission from the War Department to give the names of all who are called into active service from this section.

The lecture of Col. Goodwin of the British army, whom Dr. Law brought to Minneapolis, together with the introductory talks of Dr. W. J. Mayo and Dr. Franklin Martin (Chicago), was greatly enjoyed by all medical men who heard him. The talks were informing and inspiring.

Dr. J. P. McDowell, of Sauk Rapids, has taken over the practice of Dr. Philip Stangl, of St. Cloud, the latter having joined the Medical Corps of the United States Army and left for Fort Riley. Dr. P. E. Koerber, of Minneapolis, has taken over the practice of Dr. McDowell at Sauk Rapids.

The Section of a Hospital Unit tendered by Dr. E. P. Quain, of Bismarck, will probably be called into service very soon. The Section consists of a major, four or five captains, several lieutenants, all of whom are medical men, together with nurses. Dr. Quain will head the Section with the position of major.

Dr. Ralph T. Knight, of Minneapolis, captain of one of the few Red Cross Ambulance Units ready for service, has named the following physicians lieutenants: Drs. Paul W. Giessler and Paul J. Preston, Minneapolis; Dr. Clayton K. Williams, St. Paul; and Dr. Richard I. Dorge, Dassel. The appointments have been confirmed.

The attention of Northwestern medical men is once more called to the fact that the Hennepin County Medical Society posts on its bulletin

board on the eleventh floor of the Donaldson Building a list of the operations and clinics given at the various hospitals in Minneapolis from day to day. Any visiting physician who is desirous of seeing clinics while in the Twin Cities may find posted on this bulletin the work that is being done.

The county medical societies of the Northwest have acted at all recent meetings on the subject of the care of the patients of physicians who leave their work for war service. The families of such absent physicians will be given free medical service, and from 30 to 50 per cent of the fees received from the patients of such physicians will be given the physicians; and, best of all, their patients will be returned to them at the end of their service.

The following medical men are at the head of the Examining Board for the Medical Reserve Corps in the Northwestern States named: Minnesota—at Fort Snelling, the Surgeon of the Fort; at Minneapolis, Major J. Frank Corbett; at Rochester, Major Charles W. Mayo; at Winona, Lieut. Hugh McGaughey. South Dakota,—at Aberdeen, Lieut. W. E. Clark; at Sturgis, Capt. J. D. Brooks. North Dakota,—at Bismarck, Lieut. Albert M. Fisher. Montana,—at Missoula, the Surgeon; at Helena, Major W. C. Riddell.

The Wabasha County Society meets at Wabasha on July 5. Papers will be read as follows: "The Medical Literature Problem, and Its Relation to Therapeutics," by Dr. A. A. Rankin, Zumbro Falls; "Report of a Case of Triplets," by W. B. Heagerty, Mazeppa; "Some Phases of Tuberculosis Relative to Its Diagnosis and Pathology," by Dr. F. L. Sutton. Those in attendance will be entertained at dinner by the Wabasha and Kellogg physicians, and a visit will be made to the Buena Visity Sanatorium. A cordial invitation is extended to all to attend the meeting.

Dr. Burnside Foster, of St. Paul, died last month at the age of 56. Dr. Foster was a graduate of Harvard, and also received degrees from other schools. He was formerly a lecturer in the Medical School of the University of Minnesota, and was editor for a number of years of

the *St. Paul Medical Journal*. His University lectures on the history of medicine were published in THE JOURNAL-LANCET, and were extensively copied, the entire series being copied by the *Lancet* of India. Further notice of Dr. Foster's life appears in our editorial columns.

The National Committee for Mental Hygiene has created a subcommittee on furnishing hospital units for nervous and mental disorders to the United States Government, the project having been approved by Surgeon-General Gorgas of the U. S. Army. This subcommittee, of which Dr. Pearce Bailey, of New York, is chairman, is authorized to secure the services of alienists and neurologists to be commissioned in the Officers' Reserve Corps, Medical Section, and to serve in the neuropsychiatric units which are to be attached to the base and other hospitals of the military services of the United States. Further information will be given, and application forms sent to physicians qualified in this branch of medicine, on application by letter or in person to The National Committee for Mental Hygiene, 50 Union Square, New York City.

On May 28, a few of the ex-internes of the Minneapolis City Hospital held a meeting at the hospital, and formed a temporary organization, Dr. E. C. Robitshek acting as chairman. A second meeting was held on June 12, at the Dyckman, and a permanent association was formed, and the following officers elected: President, Dr. E. C. Robitshek; vice-president, Dr. F. J. Sauba; secretary-treasurer, Dr. J. T. Litchfield. The object of the association is to form a bond of social and professional union between the present and former internes, to assist in the promotion of the welfare of the hospital, and to stimulate scientific research in the hospital. A constitution and by-laws were drawn up and adopted. There will be two meetings a year, and the annual dues will be one dollar. The secretary has the names of all the internes since 1905, and would be pleased to hear from any who were internes prior to that time. Anyone desiring membership will communicate with the secretary for an application-blank.

APPARATUS WANTED

Betz entire body (reclining kind) hot-air apparatus or electrical body apparatus. Address 499, care of this office.

EQUIPMENT FOR SALE

An x-ray outfit, consisting of table, tubes, etc., capable of doing heavy work, for sale cheap. Address 512, care of this office.

PHYSICIAN IN HOSPITAL WANTED

Position as resident house doctor open. Salary \$1,000.00 a year. Send applications to Board of Trustees, St. Paul Hospital, St. Paul, Minn.

OFFICE FOR RENT IN MINNEAPOLIS

I am leaving for France, and will rent my office in the Physicians' and Surgeons' Building. Have two rooms and share a reception-room. Address 521, care of this office.

POSITION IN MINNEAPOLIS OFFICE WANTED

A young woman with five years' experience in a physician's office, desires a new position. Competent stenographer and typewriter. Best of references. Address 522, care of this office.

PHYSICIAN WANTED

Wanted in a thrifty German town and community a physician and druggist to go in business. Good chance for physicians and druggists who are looking for a splendid location. Address 513, care of this office.

PRACTICE FOR SALE

I wish to sell my practice in northern Minnesota in a town of 900 in a rich farming and dairying country. Will sell part or all of equipment, with real estate optional. Address 510, care of this office.

OFFICE POSITION WANTED

A young lady with no experience, but with a pleasing personality and the ability to take charge of an office containing a number of physicians, wishes a place in Minneapolis. Address 508, care of this office.

LOCUM TENENCY WANTED

I desire to take a place as locum tenens for four or five weeks this summer. Have had seven years' experience in hospital work and general practice. Address 518, care of this office.

POSITION AS MATRON OR ASSISTANT MATRON IN A HOSPITAL WANTED

By a thoroughly competent woman who has had a number of years' experience in a large institution, and can give best of references. Speaks English, German, and French. Address 516, care of this office.

PRACTICE WANTED

Am graduate of Bellevue Hospital Medical College with hospital experience in New York and Minnesota. Want to purchase a practice in a small town or associate to a physician with a well-established practice. Address 511, care of this office.

PRACTICE OFFERED

I want a physician to take over my practice. I am in the Medical Reserve, and shall soon leave. Village of 800, sixty miles from Minneapolis. Can have practice by paying running expenses, and have option of remaining permanently. Address 524, care of this office.

PRACTICE FOR SALE

In Western Minnesota in town of 550. Country thickly settled; territory quite large; nationality, Scandinavian and German; religion, Protestant. Practice amounts to \$2,500 to \$3,000 a year. Collections good. Price \$500 for office equipment, drugs, and instruments. Address 515, care of this office.

LOCATION OFFERED

I will rent my ten-room residence office, partly furnished with operating-room and surgical equipment during the war, and arrange to make the work permanent. In Minnesota town of 600, with two railroads. Practice pays \$5,000; chance for surgery. Am commissioned in Medical Reserve Corps. Address 523, care of this office.

PRACTICE FOR SALE

A \$5,000 unopposed practice in small town in northern Minnesota on railroad; good roads. Nearest doctors east 10 miles, west 15 miles, south 25 miles, north, very far. Equipment, \$500. \$2,000 drug stock optional. Have commission in U. S. Corps subject to being called at any time. Reasonable terms. Address 505, care of this office.

PRACTICE FOR SALE

In village of 500, forty miles from Minneapolis, in the lake district of Central Minnesota. Practice pays between three and four thousand dollars a year. 95 per cent voluntary collections. Will sell at invoice of office equipment on easy terms. Elgin roadster, optional. Reason for selling, commission in Medical Reserve, subject to call. This notice will appear but once. Address 520, care of this office.

PRACTICE FOR SALE

A \$3,500 to \$4,000 practice in town of 400, in one of the richest communities of Southern Minnesota. Practice is unopposed; competition, N. W., 9 miles; S. W., 9 miles; N. E., 17 miles; S. E., 15 miles. Three towns without doctors within 6, 5, and 7 miles, respectively. Mostly Norwegians, with some Germans and Hollanders. Collection, 99+ per cent. Will sell office equipment and practice for \$400. Must be taken at once as I am going into the Army. Address 525, care of this office.

PRACTICE OPEN

A man with good references is wanted to take my practice in a southern Minnesota village of 450 inhabitants. All modern conveniences are to be had. Good railroad facilities; rich farming community; one other physician in village; nearest town with a physician, nine miles. Terms: Sale of office equipment, but if not prepared to purchase, come anyway, as I have a good thing. No foreign language necessary. Am leaving July 1, going to larger town. Address 519, care of this office.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Fuerperal Septicemia	Accidental Deaths
Ada	1,253	1,432	2	1		1												
Albert Lea	4,500	6,192	3			1												
Alexandria	2,681	3,001	4															
Anoka	2,769	3,972	6		1													
Austin	5,474	6,960	6			1										1		1
Barnesville	1,326	1,353	1															
Remidji	2,183	5,099	5	1														
Benson	1,525	1,677	2			1												
Blue Earth	2,900	2,319	1															
Brainerd	1,524	8,526	12			2												1
Breckenridge	1,282	1,840	0								2							
Canby	1,100	1,528	3															
Cannon Falls	1,239	1,385	3															
Chaska	2,165	2,050	1															
Chatfield	1,426	1,226	1			1												
Cloquet	3,074	7,031	3			1				1								
Crookston	5,359	7,559	6		1									1			1	1
Dawson	962	1,318	0															
Detroit	2,060	2,807	2															
Duluth	52,968	78,466	128	8	6	14	0	0	0	1	0	0	7	0	3	10	1	4
East Grand Forks	2,077	2,533	3	1														
Ely	3,572	3,572	6															
Eveleth	2,752	7,036	4									1						
Fairmont	3,440	2,958	3			1										1		
Faribault	7,868	9,001	12	1												1		1
Fergus Falls	6,072	6,887	10			1							1					
Glencoe	1,788	1,788	2															
Glenwood	1,116	2,161	1															
Granite Falls	1,454	1,454	0															
Hastings	3,811	3,983	1			1									1	1		
Hutchinson	2,495	2,368	2															
International Falls		1,487	3	1		1										1		
Jordan	1,270	1,151	1															
Lake City	3,142	3,142	2															
Le Sueur	1,937	1,755	4													1		
Little Falls	5,774	6,078	7	1											1	1		
Luverne	2,223	2,540	3															
Madison	1,336	1,811	1															
Mankato	10,559	10,365	16	1	1	2										3	1	
Marshall	2,088	2,152	3															
Melrose	2,591	2,591	1															
Minneapolis	202,718	301,408	421	51	5	37	8	3	2	0	1	0	24	0	9	29	1	24
Montevideo	2,146	3,056	4		1													
Montgomery	979	1,267	0															
Moorhead	3,730	4,840	8			1												3
Morris	1,934	1,685	3			1												
New Prague	1,228	1,551	2	1														
New Ulm	5,403	5,643	9															
Northfield	3,210	3,215	5										1			1		1
Ortonville	1,247	1,774	3															
Owatonna	5,561	5,658	6													1		
Pipestone	2,536	2,475	1															
Red Lake Falls	1,666	1,666	0															
Red Wing	7,525	9,048	7															
Redwood Falls	1,661	1,666	3															
Renville	1,075	1,182	3															
Rochester	6,843	7,844	40	4	1	1			1							6		
Rushford	1,100	1,311	0															
St. Charles	1,304	1,159	2															
St. Cloud	8,663	10,600	11	2									1					1
St. James	2,102	2,102	2															
St. Paul	163,632	214,744	247	23	8	16	5	0	2	0	1	0	5	1	12	24	0	19
St. Peter	4,302	4,176	6													1		
Sauk Centre	2,154	2,154	3	1	1													
Shakopee	2,046	2,302	3			1												
Sleepy Eye	2,046	2,247	4														1	
South St. Paul	2,322	4,510	4						1									
Staples	1,504	2,558	3			1												
Stillwater	12,318	10,198	4	1		1												
Thief River Falls	1,819	3,174	5			1									1			
Tower	1,111	1,111	0															
Tracy	1,911	1,826	4													1		
Two Harbors	3,278	4,990	2															1
Virginia	2,962	10,473	17	1		1		1	1						1	3		
Wabasha	2,622	2,622	5	2									1			1		1
Warren	1,276	1,613	4													1		1
Waseca	3,103	3,054	2															
Waterville	1,260	1,273	3															
West St. Paul	1,830	2,660	3	1											1			
Willmar	3,409	4,135	7			1												
Winona	19,714	18,583	25	5		7												2
Winthrop	813	1,043	1															
Worthington	2,386	2,385	2															

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	1															
Aitkin	1,719	1,633	1															
Akeley			1															
Appleton	1,184	1,221	2			1												
Belle Plaine	1,121	1,204	0															
Biwabik		1,690	1															1
Bovey		1,377	1			1												
Browns Valley	721	1,058	0															
Buffalo	1,040	1,227	0															
Caledonia	1,175	1,372	4															
Cass Lake	546	2,011	2															1
Chisholm		7,684	5			1				2								1
Coleraine		1,613	1															
Delano	967	1,031	1															
Farmington	733	1,024	0															
Fosston	864	1,055	1														1	
Frazee	1,000	1,645	2															
Grand Rapids	1,428	2,239	2															
Hibbing	2,481	8,832	9	1		3												1
Jackson	1,756	1,907	1			1												
Janesville	1,254	1,173	0															
Kenyon	1,202	1,237	0															
Lake Crystal	1,215	1,038	3															1
Litchfield	2,280	2,333	0															
Long Prairie	1,385	1,250	1												1			
Madelia	1,272	1,273	1															
Milaca	1,204	1,102	2															
Mountain Lake	959	1,081	3	2													1	
Nashwauk		2,080	2												1			
North Mankato	939	1,279	0															
North St. Paul	1,110	1,404	0															
Osakis	917	1,013	1															
Park Rapids	1,313	1,850	0															
Pelican Rapids	1,033	1,019	1	1														
Perham	1,182	1,376	0															
Pine City	993	1,258	2														1	
Plainview	1,038	1,175	5															
Preston	1,278	1,193	2														1	
Princeton	1,319	1,555	4	1													1	
St. Louis Park	1,325	1,743	3			1												
Sandstone	1,189	1,818	1															
Sauk Rapids	1,391	1,745	2															
South Stillwater	1,422	1,343	1															
Springfield	1,511	1,482	1															
Spring Valley	1,770	1,817	2															
Wadena	1,520	1,820	3			1												
Wells	2,017	1,755	1															
West Minneapolis	2,250	3,022	2														1	1
Wheaton	1,132	1,300	0															
White Bear Lake	1,288	1,505	0															
Windom	1,944	1,749	2														2	
Winnebago City	1,816	2,555	2	1														
Zumbrota	1,119	1,138	1															

STATE INSTITUTIONS

Anoka, Asylum	3																	
Faribault, School for Blind	0																	
Faribault, School for Deaf	0																	
Faribault, School for Feeble Minded	3	3																
Fergus Falls, Hospital for Insane	10	3	1														1	
Hastings, Asylum	5	1																1
Minneapolis, Soldiers' Home	4																1	
Owatonna, School for Dependents	0																	
Red Wing, State Training School	0																	
Rochester, Hospital for Insane	14	3																
Sauk Centre, Home School for Girls	0																	
St. Peter, Hospital for Insane	13	1	1															
St. Cloud, State Reformatory	0																	
Stillwater, State Prison	0																	

OTHER PARTS OF STATE

	822	76	12	86	9	2	2	0	3	1	1	2	22	53	9	34
Total for state	2125	200	39	192	22	6	12	1	8	1	41	6	55	150	14	102

*No report received. REGISTRAR not doing his duty.

115 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

A PRIVATE MATERNITY HOME

We believe Mrs. J. W. Murray, 2014 Twenty-sixth avenue south, Minneapolis, is conducting a maternity home for private patients that meets all the exacting requirements of such work; and physicians who refer patients to Mrs. Murray may be assured that they will be in safe and discreet hands.

A NEW OFFICE BUILDING IN MINNEAPOLIS

The new La Salle Building, on the corner of Marquette Avenue and Seventh Street, is now ready for occupancy. Its location is, in many respects, the best in the city for physicians. It is a beautiful structure, and it will be finished and maintained in the best possible condition.

For further particulars, address the La Salle Holding Company, 315 Kasota Building, Minneapolis.

BEFORE OPERATION

The old practice of giving cathartics before a surgical operation has passed. The modern and sensible way is to empty the alimentary canal without producing irritation, weakness, or other untoward effect. The best preparation yet discovered for this purpose is paraffin, as put up by the Standard Oil Company in its preparation known as Stanolind Liquid Paraffin. It is bland in its action, and produces just the results sought without any bad after-effect.

THE STANDARD MEDICAL COMPANY, MINNEAPOLIS

The above Company is showing in our advertising columns a line of physicians' and surgeons' instruments of the highest grade that they offer at exceedingly attractive prices. The quality of everything sold by the Company is guaranteed, not alone as they represent it, but as to what it should be under all the conditions of its use. The careful surgeon may rightly demand such a guarantee in the interests of his patient.

It is worth while to correspond with and to visit the extensive show-rooms and factory of this Company.

LIFE-SAVING APPARATUS

The so-called lungmotor or pulmotor has proved its worth, and one of these instruments should be put within the reach of every group of people where death may follow from drowning, suffocation, poisoning, etc. Every hospital, village, pleasure resort, etc., should have one of these instruments. It is quite probable that every such instrument properly placed will save one or more lives within a brief period. If so, is it not worth while to buy one?

Ask Messrs. Noyes Bros. & Cutler, St. Paul, about them.

THE SWEDISH HOSPITAL OF MINNEAPOLIS

The Swedish Hospital of Minneapolis is doing a splendid work, and, it may be said, almost an ideal work in its line. It maintains the highest standard of

efficiency from the medical and surgical standpoint. It looks after the comfort and the welfare of its patients in an unusual manner. It does even more of its share of charitable work; and yet it discountenances all the impositions practiced by both the laity and certain members of the profession upon institutions of its kind, and practiced to the detriment of all hospital work, of the generous patrons who assist to maintain all semi-charitable institutions, and of all decent patients.

Mr. G. W. Olson, the superintendent of the Swedish Hospital, is a leader among hospital superintendents, and is doing a valuable and highly commendable work.

WHAT REMEDIES IN NEURITIS?

In neuritis, is the hot-water bottle the best anodyne? Palliation, by means of externally applied heat, is just as popular today as it was in Hippocrates' time.

The hot bath and the hot-water bottle are wonderful comforters; but who can be continuously in the bath-tub, or who can be forever carrying a hot-water bottle? And how all too soon does the most faithful hot-water bottle lose its ardor and its temperature!

There is no simple adjunct in this category more simple and more genuinely effective than application by the patient himself, if possible along the course of the affected nerve, with K-Y Analgesic, (methyl-salicylate, camphor, and menthol, combined in a non-greasy, water-soluble base).

"K-Y" Analgesic has the obvious advantage over the hot-water bottle in that "it stays put" for a much greater period of time. Nor is there the possible danger of a hot-water bottle burn,—a factor especially to be thought of where the neuritis patient is weak and infirm.

A VACATION IN BATTLE CREEK

The idea of spending a vacation in a sanitarium may seem odd to one who does not understand how a great sanitarium is conducted today. Its healing devices do not stop with the procedure set down in medical text-books, but include agreeable surroundings and healthful diversions of many kinds to keep patients from brooding over their troubles. Exercise, instead of being a tedious task, is taken in such attractive and varied forms that it becomes a delight. A sanitarium managed on such lines offers all the pleasures and attractions of an ordinary summer resort, and much besides. The business man who thinks he is merely run down and needs only rest, knows that in such an institution, a corps of experienced physicians, backed by complete diagnostic apparatus, can tell him exactly wherein his mechanism is showing signs of wear and just what repair processes he needs. He knows that instead of the rich, haphazard menu of our expensive hotel, he will have the foods which he needs, skillfully prepared to tempt his appetite. Late hours and nerve-racking amusements will be replaced by rational pleasures. Best of all, a course in health training will enable him to return to his work with a knowledge that will increase his efficiency and lessen the likelihood of ill-health. That this attitude is widespread is shown by the fact that the patronage of the Battle Creek Sanitarium in summer is much greater than in winter.

SALVARSAN AND NEOSALVARSAN

(DIOXYDIAMINOARSENOBENZENE DIHYDROCHLORIDE)—(EHRlich'S "606")

I AM about to place on the market American Salvarsan and Neosalvarsan, made according to the Ehrlich processes, as carried out by Farbwerke, v. Meister Lucius & Brüning, Hoechst a/Main. It will be made at my new Brooklyn plant, under the supervision of Dr. G. P. Metz, who was instructed in the processes of manufacture at Hoechst.

My plant in Brooklyn, which I have incorporated as the "H. A. Metz Laboratories, Inc.," is nearly completed, and is already turning out Salvarsan, though not yet in commercial quantities. I hope not later than July 1st to supply American Salvarsan and Neosalvarsan to the medical profession and hospitals at a price materially less than that of the imported product, saving the expenses incurred by a duty of 30%, importation charges and royalties.

My plant will be large enough to make the product available also for export to South and Central American countries.

I bespeak the cooperation of physicians in this enterprise, and assure them that no labor or expense will be spared to give them a perfect Salvarsan service.

H. A. METZ, President

FARBWERKE-HOECHST COMPANY
H. A. METZ LABORATORIES, INC.

122 Hudson Street, New York

THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, JULY 15, 1917

No. 14

TRANSACTIONS OF THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION, THIRTY-SIXTH ANNUAL MEETING, 1917

OFFICERS AND COMMITTEES

PRESIDENT

H. J. G. KOOBS, M. D.....Scotland

FIRST VICE-PRESIDENT

D. L. SCANLON, M. D.....Volga

SECOND VICE-PRESIDENT

HARRY T. KENNEY, M. D.....Pierre

SECRETARY-TREASURER

ROBERT D. ALWAY, M. D.....Aberdeen

COUNCILOR—FIRST DISTRICT, AND PRESIDENT OF THE COUNCIL

WILLIAM EDWARDS, M. D.....Bowdle

COUNCILOR—SECOND DISTRICT

LESLIE G. HILL, M. D.....Watertown

COUNCILOR—THIRD DISTRICT

N. K. HOPKINS, M. D.....Arlington

COUNCILOR—FOURTH DISTRICT, AND SECRETARY OF THE COUNCIL

HARRY T. KENNEY, M. D.....Pierre

COUNCILOR—SIXTH DISTRICT

FREDERICK TREON, M. D.....Chamberlain

COUNCILOR—SEVENTH DISTRICT

G. G. COTTAM, M. D.....Sioux Falls

COUNCILOR—EIGHTH DISTRICT

JAMES ROANE, M. D.....Yankton

COUNCILOR—NINTH DISTRICT

F. E. ASHCROFT, M. D.....Deadwood

COUNCILOR—TENTH DISTRICT

HAMPTON R. KENASTON, M. D.....Bonesteel

MEMBER OF HOUSE OF DELEGATES, AMERICAN MEDICAL ASSOCIATION

PERCY PEABODY, M. D.....Webster

ALTERNATE

B. H. SPRAGUE, M. D.....Huron

Proceedings of the House of Delegates

FIRST SESSION—TUESDAY, MAY 29TH

The House of Delegates met at the Elks' Hall,
Yankton, May 29, 1917, at 11 A. M.

On roll-call the following responded: Dr. F. M. Crain, Redfield, President; Dr. R. D. Alway, Aberdeen, Secretary; Dr. C. E. McCauley, Aberdeen, alternate; Dr. P. D. Peabody, Webster; Dr. J. B. Vaughn, Castlewood, alternate; Dr. J. C. Baker, Ramona; Dr. A. H. Youngs, Pierre; Dr. E. M. Young, Plankinton; Dr. E. L. Perkins, Sioux Falls; Dr. N. J. Nessa, Sioux Falls; Dr. Mortimer Herzberg, Vermillion; Dr. E. T. Anderson, Platte; Dr. J. W. Freeman, Lead, alternate; Dr. Wm. Edwards, Bowdle; Dr. L. G. Hill, Watertown; Dr. N. K. Hopkins, Arlington; Dr. H. T. Kenney, Pierre; Dr. James Roane, Yankton; Dr. H. R. Kenaston, Bonesteel, and Dr. J. C. Waterman, Burke.

The Secretary presented the following report:

REPORT OF THE SECRETARY

To the President and House of Delegates of the South Dakota State Medical Association:

Gentlemen: The membership of the Association is as follows: Aberdeen District, 73; Watertown District, 37; Lake Preston District, 34; Pierre District, 9; Mitchell District, 43; Sioux Falls District, 62; Yankton District, 52; Black Hills District, 27; Rosebud District, 14. Total, 351.

Last fall it was thought advisable to endeavor to interest the physicians in state politics. Heretofore we have had very little influence in the Legislature, and have been looked upon as a joke by the people and by the politicians especially. It seemed to a number of us

that, with six or seven hundred doctors in the state, if we could get together and vote the same way we could make our influence felt.

With the approval of the President, a number of letters were sent out, not only to members of the Association, but to all the physicians of the state.

Many favorable replies were received, interest was aroused, and quite a number of physicians spent considerable time in helping to elect the right men to our Legislature. Our influence has been felt, and there is no doubt but that we helped more than a little in the personnel of that honorable body of men who spent the winter at the Capitol. We can and should play an important part in state politics, and be able to get any reasonable legislation we ask, if we will work together and vote the same way, irrespective of party politics.

We succeeded in getting some beneficial amendments to our health laws and practice act, also a couple of thousand dollars increase in our appropriation. We also succeeded in killing the Chiropractor bill in the House. You will remember that two years ago the bill passed the House with a good majority. Dr. Jenkins, Secretary of the Board of Health, spent the session at Pierre, lobbying in our interest, and kept this office advised at all times in regard to our interests there.

I would recommend that this Association adopt a resolution asking Congress to abrogate the patent on salvarsan for the reason that no government should permit the patenting and private control of any agent which is of such great value to the welfare of its people.

The following committees should report at this meeting:

Health and Public Instruction, Dr. J. G. Parsons, Sioux Falls, Chairman.

First-Aid Conference of America, Dr. F. E. Clough, Lead, Chairman.

Medical Defense, Dr. G. G. Cottam, Sioux Falls, Chairman.

The terms of Councilors in Districts Nos. 2, 8, and 10 expire at this meeting, and their successors should be elected.

Respectfully submitted,

R. D. ALWAY, M. D.,
Secretary.

The President appointed the following committees:

Resolutions of respect in the case of the death of Mrs. S. M. Hohf: Drs. J. B. Vaughn, E. M. Morehouse, and J. W. Freeman.

Resolutions: Drs. C. E. McCauley, H. T. Kenney, and L. G. Hill.

Necrology: Drs. E. L. Perkins, P. D. Peabody, and A. H. Youngs.

Nominations: Drs. Wm. Edwards, L. G. Hill, J. C. Baker, H. T. Kenney, E. M. Young, E. L. Perkins, Mortimer Herzberg, J. W. Freeman, and H. R. Kenaston.

Moved by Dr. P. D. Peabody, seconded by Dr. H. T. Kenney and carried, that the Secretary be instructed to write the representatives in Congress asking them to use all their influence to

have the patent on salvarsan permanently abrogated.

Moved by Dr. Hill and carried, that the President appoint a committee consisting of the President and Secretary and one delegate from each district to furnish a list of physicians that this Association shall recommend as eligible for appointment on the Board of Health, and send them to the Governor.

The President appointed the following:

Drs. F. M. Crain, President; R. D. Alway, Secretary; P. D. Peabody, Webster; L. G. Hill, Watertown; J. C. Baker, Ramona; A. H. Youngs, Pierre; E. M. Young, Plankinton; E. L. Perkins, Sioux Falls; Mortimer Herzberg, Vermillion; J. W. Freeman, Lead; and J. C. Waterman, Burke.

Meeting adjourned.

SECOND SESSION—WEDNESDAY, MAY 30TH, AT
9:30 A. M.

The House of Delegates was called to order by the President, Dr. F. M. Crain, with the following present:

Dr. C. E. McCauley, Dr. J. B. Vaughn, Dr. A. H. Youngs, Dr. E. M. Young, Dr. B. A. Bobb, Dr. E. L. Perkins, Dr. N. J. Nessa, Dr. Mortimer Herzberg, Dr. E. T. Anderson, Dr. J. W. Freeman, Dr. Wm. Edwards, Dr. L. G. Hill, Dr. N. K. Hopkins, Dr. H. T. Kenney, Dr. G. G. Cottam, Dr. James Roane, and Dr. R. D. Alway.

Dr. J. G. Perkins presented the following report on Public Health Instruction:

To the House of Delegates of the South Dakota State Medical Association:

I have the honor to submit the following report of the Committee on Health and Public Instruction for 1916-1917:

As arranged with the delegates at the 1916 session, I made a special investigation regarding the public-health needs of our state, and, after conference with a number of prominent public-health authorities in other states, made a report, setting forth what appeared to be a feasible plan for reorganization of our public-health service.

The following is an abstract of the report, which we feel should be known to the entire profession of the state:

Modern public-health service involves the carrying out, under highly trained specialists in public-health administration, of the investigation of the sources of disease, the collection and expert interpretation of morbidity and mortality statistics, sanitary engineering, laboratory work, public-health nursing, public-health education, and the free distribution of antitoxins and vaccines.

Our present organization is very defective and inefficient. Instead of a superintendent untrained in public-

health administration and engaged in part-time private practice, it is imperative that we have, as the executive officer of the State Board of Health, a trained specialist in public-health administration, preferably a physician with a D. P. H. degree. He should be given an adequate salary, and given a free hand in working out the details of the organization.

At least two expert field men, known as epidemiologists, to make first-hand investigations of the sources of disease, and to take charge of epidemics, rendering expert service in the speedy and efficient detection and control of sources of infection, are needed; and, to accommodate our large territory, two branch laboratories, serving the central and northern portions of the state, are needed.

It is absolutely necessary to have the collection of vital statistics under the immediate control of the Board of Health. Reports giving reliable information as to the presence of disease at any day in the year, are needed to enable the Board to even approximate intelligent service in preventing and controlling disease. Morbidity statistics are of far greater importance than mortality statistics.

Food and drug investigations, now entirely outside the control of the Board of Health, should be correlated with it.

Public-health education is regarded by modern expert public-health authorities as of vital importance in securing the intelligent co-operation of the public. Bulletins, exhibits, and public-health conferences should be arranged for. Especially important is the holding of an annual school of sanitary instruction for health officers, where, under the instruction of experts, they may learn how to perform their duties in an efficient manner. A week's instruction of this nature at the expense of the Department, as is carried out in Kansas, for example, would add greatly to the value of the work done by local health officials.

To carry out this work properly, an annual expense of about twenty-five thousand dollars is required. To meet this expense it is recommended that the following methods be adopted: First, the Kansas system of turning into the public-health fund the fees now received by counties for marriage licenses. This would furnish a matter of five thousand dollars. Second, the making available the surplus turned into the state treasury by the Food and Drug Commission, which amounted last year to about twenty-three thousand dollars. In this way, the old cry of expense may be stopped.

The following legislation was recommended:

A. Requiring the Board of Health to elect some physician, not a member of the Board, who is an expert public-health administrator, to act as executive officer of the Board, and delegating to him authority to perform the duties laid by law upon the Board.

B. Correlating the Food and Drug Commission with the Board.

C. Placing the Division of Vital Statistics under the control of the Board of Health.

D. Making available the surplus funds of the Food and Drug Commission.

E. A copy of the Kansas law turning into the public-health fund the fees received for marriage licenses.

The lecture work done by your Committee has been similar to that in past years. A number of addresses were made at the colleges and teachers' institutes and

summer schools, and others were made in connection with the conservation-of-vision work.

In general, the profession have showed an increased interest in co-operation with the Committee in giving talks to the public, and the thanks of the Committee are offered to all those who have helped.

The unpleasant situation growing out of the work and duties of this Committee in denouncing the practice of making sexual examinations in connection with "educational clinics" created a great deal of unfortunate publicity, which has undoubtedly had a retarding effect on the work of school-inspection.

The profession gave us loyal support in our contention, as their representative, that the making of sexual examinations, especially when done by an unlicensed, non-medical layman, who was a member of the faculty of a State educational institution, was ill-advised and dangerous. The end of the contention thus made was the resolution of the Board of Regents, making a statement to the same effect, and forbidding any further practices of the kind by employees of the State educational institutions.

The Committee has co-operated as far as possible with national organizations, such as the Societies for the Control of Cancer and for the Prevention of Blindness.

As chairman of the Committee, I feel that having devoted a considerable amount of time for several years in starting this work, I have "done my bit," as it were, and do not feel able to continue to make the sacrifice of time and expense which has been needed, the work having taken in the aggregate about a month of time away from home each year. I, therefore, ask to be relieved of my duties, and I make the suggestion that this Committee be operated in connection with the University Extension work at the State University, and that the Professor of Hygiene be its chairman.

Prof. Herzberg tells me that his Department has not, at the present time, adequate funds to do this work, but I believe that upon proper representation to the Regents, arrangements can be made so that he will be enabled to direct the important work of this Committee.

J. G. PARSONS, M. D.,
Chairman.

The report was, on motion, adopted and ordered filed.

Dr. G. G. Cottam, Chairman of the Committee on Medical Defense, stated that on account of his recent illness he had been unable to get all the information he desired, and requested that the Committee be given another year.

Moved by Dr. Perkins, seconded by Dr. Nessa, and carried, that the Committee be continued another year.

Dr. F. A. Spafford, Chairman of the Legislative Committee, made a report outlining the Committee's work at Pierre during the session of the Legislature. On motion the report was adopted.

Dr. L. G. Hill, Chairman of the committee to furnish the Governor a list of physicians for the State Health Board reported that the Com-

mittee had not had the time to hold a meeting, and had no report to hand in.

Dr. G. G. Cottam moved that the committee be discharged. Motion carried.

Dr. G. G. Cottam moved that a committee, consisting of Dr. Crain, Dr. Hill, and Dr. Alway, be appointed, with instructions to call on Governor Norbeck and consult with him in regard to the personnel of the new Health Board. Motion was seconded and carried.

Dr. C. E. McCauley, Chairman of the Committee on Resolutions, made the following report and moved its adoption:

To the President and House of Delegates of the South Dakota State Medical Association:

Your Committee on Resolutions begs leave to report the following:

That the State Medical Association extend to the members of the Yankton District Medical Society and the physicians of Yankton their sincere appreciation of the hospitality, courtesies, and general good fellowship extended to us.

To Dr. Crain, our able President, we extend our expression of gratitude for the able manner of conducting the meetings, for his good management of the office during the past year, and for the personal interest he has taken in each member present.

We extend thanks to the Elks' Club and to Dr. L. C. Mead and associates of the State Hospital, and to the Yankton College for the many courtesies shown to us.

We wish to commend Dr. R. D. Alway for his work in keeping the business of the Association in a prosperous condition.

Respectfully submitted,

C. E. McCAULEY, M. D.
H. T. KENNEY, M. D.
L. G. HILL, M. D.

Motion prevailed.

Dr. E. L. Perkins, Chairman of the Committee on Necrology, made the following report and moved its adoption:

South Dakota State Medical Association:

Mr. President and Gentlemen:

Your Necrology Committee most respectfully presents the following report concerning the deaths in our Association the past year of five associates. Seldom are we called upon in any given year to note the passing of so many of our medical brethren. The grim reaper has taken from our midst Dr. I. J. Sampson, of Mellette, who was accidentally drowned while fording a storm-swollen stream in answering a call to service; Dr. George H. Burleigh, of Estelline, and Dr. F. H. Schoonmaker of Arlington, both of whom died of heart disease; Dr. T. G. Kyde, of Phillip, whose death followed an operation for appendicitis; and Dr. R. D. Jennings, of Hot Springs, who succumbed to nephritis.

All these fellow workers will be sorely missed from our councils, and in behalf of the Association we extend

our heartfelt sympathy to the beloved relatives and friends who especially mourn their loss.

Respectfully submitted,

EDWIN L. PERKINS, M. D.,
Chairman.

Motion prevailed.

Dr. J. B. Vaughn, chairman of the committee to draw up a resolution of respect in the case of the death of Mrs. S. M. Hohf, made the following report which was on motion adopted:

Your Special Committee on Necrology offer the following:

It is with profound sorrow we chronicle the deep affliction which has befallen the household of our esteemed brother physician, Dr. S. M. Hohf.

Miss Carrie Elizabeth Sniffin was born in the State of New York at Armuck on March 1, 1887. Later, her parents moved to New York City, where she received her education. In the '90s she visited a sister in Yankton, S. D., and during this visit she met Dr. Hohf. They were married on October 12, 1898, in New York City, and came immediately to Yankton, and have resided in this city since that time. Two daughters have been born to this union, Lillian and Florence.

On May 13, Dr. Hohf accompanied his wife to St. Luke's Hospital in Chicago to have a tumor removed by an old friend. The operation was performed on May 15. Infection followed. Her earthly existence was terminated on Sunday, May 27, 1917.

Mrs. Hohf was not a stranger to the members of this Association; her cheery smile and pleasing personality were habitually expected. In 1910 she was active in the formation of the Ladies' Auxiliary; three years later she was the president of this body. Her marked enthusiasm for the organization was manifested on all occasions.

Mrs. Hohf was a woman who did things,—in her home, church, chapter, ladies' clubs, and society in general. She was not only a leader, but an advisor. One glance of her home, family, and wholesome daughters demonstrates her exemplary life.

Her sojourn in this world has been short, but her kindly deeds have been many.

To her numerous friends and relatives and especially to her devoted husband and daughters, we extend our heartfelt sympathy.

Respectfully submitted,

J. B. VAUGHN, M. D.,
E. M. MOREHOUSE, M. D.,
J. W. FREEMAN, M. D.,
Committee.

Dr. Wm. Edwards, Chairman of the Committee on Nominations, made the following report:

President: Dr. H. J. G. Koobs, Scotland, and Dr. L. G. Hill, Watertown.

First Vice-President: Dr. D. L. Scanlon, Volga.

Second Vice-President: Dr. H. T. Kenney, Pierre.

Councilors: Second District, Dr. L. G. Hill, Watertown; Eighth District, Dr. James Roane,

Yankton; Tenth District, Dr. H. R. Kenaston, Bonesteel.

Place of meeting for 1918: Lake Madison, Huron, or Mitchell.

There being no further motions, the President declared nominations closed, and announced that the election of officers would be in order.

Dr. L. G. Hill requested that his name be withdrawn as candidate for the office of president, and moved that the rules be suspended and the Secretary be instructed to cast the ballot of the Association for Dr. H. J. G. Koobs for President for the ensuing year. Motion prevailed.

The Secretary announced that he cast the ballot of the Association for Dr. Koobs, and President Dr. Crain declared his election.

Dr. Perkins moved that the rules be suspended and the Secretary be instructed to cast the ballot of the Association for Dr. Scanlon for First Vice-President, for Dr. Kenney for Second Vice-President, and Drs. Hill, Roane, and Kenaston for Councilors.

Motion prevailed, and the Secretary announced that he had so cast the vote, whereupon they were declared elected by the President.

The President ordered the ballot taken for the place of the 1918 annual meeting, the cities to be voted upon being Lake Madison, Huron and Mitchell. The result of the ballot was largely in favor of Mitchell, and it was declared the place for the next meeting.

There being no further business, the meeting adjourned *sine die*.

PROCEEDINGS OF THE BOARD OF COUNCILORS

FIRST SESSION—TUESDAY, MAY 29TH

The Board of Councilors met at Elks' Hall, Yankton, at 12 M., Tuesday, May 29th. On roll-call the following responded:

Dr. Wm. Edwards, Bowdle; Dr. L. G. Hill, Watertown; Dr. James Roane, Yankton; Dr. H. R. Kenaston, Bonesteel; Dr. H. T. Kenney, Pierre; Dr. F. M. Crain, Redfield, and Dr. R. D. Alway, Aberdeen.

The Secretary presented his financial report as follows:

FINANCIAL REPORT OF THE SECRETARY-TREASURER

Receipts

Balance on hand May 23, 1916.....	\$1,074.08
May 26, 1916, per capita dues, District No. 2..	3.00
May 26, 1916, per capita dues, District No. 7..	21.00
May 26, 1916, per capita dues, District No. 6..	9.00
June 11, 1916, per capita dues, District No. 7..	6.00
June 11, 1916, per capita dues, District No. 3..	3.00

July 7, 1916, per capita dues, District No. 1..	6.00
Aug. 1, 1916, per capita dues, District No. 1..	3.00
Aug. 8, 1916, per capita dues, District No. 3..	3.00
Sept. 1, 1916, per capita dues, District No. 7..	3.00
Sept. 6, 1916, per capita dues, District No. 1..	3.00
Oct. 11, 1916, per capita dues, District No. 6..	3.00
Oct. 30, 1916, per capita dues, District No. 6..	3.00
Oct. 31, 1916, per capita dues, District No. 7..	3.00
Nov. 16, 1916, per capita dues, District No. 1..	3.00
Dec. 28, 1916, per capita dues, District No. 9..	3.00
Mch. 1, 1917, per capita dues, District No. 4..	12.00
Mch. 5, 1917, per capita dues, District No. 4..	6.00
Mch. 12, 1917, per capita dues, District No. 4..	3.00
Mch. 23, 1917, per capita dues, District No. 4..	3.00
Mch. 29, 1917, per capita dues, District No. 10..	39.00
Apr. 1, 1917, per capita dues, District No. 3..	102.00
Apr. 1, 1917, per capita dues, District No. 2..	108.00
Apr. 3, 1917, per capita dues, District No. 9..	75.00
Apr. 4, 1917, per capita dues, District No. 6..	99.00
Apr. 7, 1917, per capita dues, District No. 4..	3.00
Apr. 8, 1917, per capita dues, District No. 8..	150.00
Apr. 12, 1917, per capita dues, District No. 7..	174.00
Apr. 18, 1917, per capita dues, District No. 6..	12.00
Apr. 21, 1917, per capita dues, District No. 8..	3.00
May 7, 1917, per capita dues, District No. 6..	12.00
May 17, 1917, per capita dues, District No. 6..	9.00
May 17, 1917, per capita dues, District No. 1..	219.00
May 19, 1917, per capita dues, District No. 7..	15.00
May 24, 1917, per capita dues, District No. 2..	3.00
May 24, 1917, per capita dues, District No. 10..	3.00
May 27, 1917, per capita dues, District No. 9..	3.00

Legislative Fund—

Aberdeen District	25.00
Watertown District	25.00
Lake Preston District	25.00
Mitchell District	25.00
Sioux Falls District	25.00
Yankton District	25.00
Black Hills District	25.00

Total\$2,377.08

Disbursements

May 25, 1916, Warrant No. 26.....	\$50.00
May 25, 1916, Warrant No. 27.....	30.00
May 25, 1916, Warrant No. 28.....	150.00
May 29, 1916, Warrant No. 1.....	150.00
June 3, 1916, Warrant No. 2.....	5.00
June 17, 1916, Warrant No. 3.....	171.01
July 3, 1916, Warrant No. 4.....	128.50
July 7, 1916, Warrant No. 5.....	4.50
Dec. 2, 1916, Warrant No. 6.....	32.61
Jan. 1, 1917, Warrant No. 7.....	185.09
Feb. 24, 1917, Warrant No. 8.....	17.50
Feb. 24, 1917, Warrant No. 9.....	5.75
Apr. 10, 1917, Warrant No. 10.....	4.82
May 9, 1917, Warrant No. 11.....	22.00
May 9, 1917, Warrant No. 12.....	100.00
May 9, 1917, Warrant No. 13.....	100.00
May 13, 1917, Warrant No. 14.....	3.50
May 13, 1917, Warrant No. 15.....	22.50

Total\$1,182.78

Balance on hand May 28, 1917.....\$1,194.30

Respectfully submitted,

R. D. ALWAY, M. D.,
Secretary-Treasurer.

The report on motion was adopted and ordered filed.

The President appointed an auditing committee consisting of Dr. Wm. Edwards, Dr. H. R. Kenaston, and Dr. James Roane.

Meeting adjourned.

SECOND SESSION—WEDNESDAY, MAY 30TH

The Board of Councilors was called to order Wednesday, May 30, at 3:30 P. M. Those present were:

Dr. Wm. Edwards, Dr. L. G. Hill, Dr. N. K. Hopkins, Dr. H. T. Kenney, Dr. G. G. Cottam, Dr. James Roane, Dr. F. M. Crain, and Dr. R. D. Alway.

Dr. Wm. Edwards, Chairman of the Auditing Committee, reported that the Committee had found the books and accounts of the Secretary-Treasurer correct, and approved the same. Report, on motion, was adopted.

The following bills, on motion of Dr. Roane,

seconded by Dr. Cottam, were allowed and ordered paid:

Dr. Percy D. Peabody, expenses to the A. M. A. meeting.....	\$50.00
Dr. R. D. Alway, Secretary-Treasurer, salary	150.00
Dr. Alway, expenses to Pierre.....	15.00
Dr. Alway, telegrams, postage, and telephones	72.13
Express on war pictures.....	3.30
Clinical Film Company for rent of war pictures	25.00
Flowers	15.00

On election of officers for the Council for the ensuing year, Dr. Wm. Edwards for President and Dr. H. T. Kenney for Secretary, were unanimously elected.

Council adjourned *sine die*.

R. D. ALWAY, M. D.
Secretary.

DISTRICT AND COUNTY ROSTER

ABERDEEN DISTRICT MEDICAL SOCIETY—NO. 1

PRESIDENT
Murdy, R. L.....Aberdeen

SECRETARY
Kraushaar, F. J.....Aberdeen

Adams, B. A.....Bristol
Adams, J. F.....Aberdeen
Aldrich, H. H.....Wessington
Alway, R. D.....Aberdeen
Bailey, F. C.....Redfield
Baldwin, F. M.....Redfield
Bear, T. H.....Timber Lake
Beil, A.....Selby
Brosseau, J. E.....Frankfort
Brown, A. E.....Webster
Bruner, J. E.....Frederick
Carpenter, G. S.....Bowdle
Cook, J. F. D.....Langford
Countryman, G. E.....Aberdeen
Crain, F. M.....Redfield
Creamer, Frank H.....Dupree
Curtis, J. E.....Lemmon
Devereaux, T. J.....Aberdeen
Dinsmore, W. E.....Claremont
Dunn, J. E.....Groton
Edwards, Wm.....Bowdle

Farrell, W. D.....Aberdeen
Ferguson, W. J.....Milbank
Field, L. M.....Aberdeen
Fiksdal, M. J.....Webster
Freyberg, F. W.....Aberdeen
Harris, H. G.....Wilmot
Hart, B. M.....Onida
Hart, Robert.....Groton
Herman, H. J.....Webster
Herman, J. D.....Conde
Hill, Robert.....Ipswich
Hoagland, C. C.....Veblen
Holmes, A. E.....Verdon
Holmes, Chas. F.....Hecla
Homan, C. A.....Aberdeen
Jackson, E. B.....Aberdeen
Jacotel, J. A.....Milbank
Jenkins, P. B.....Waubay
Johnston, M. C.....Aberdeen
Jones, R. R.....Britton
Kaps, F. O.....Britton
Kerns, G. G.....Leola
Kettner, J. C.....Leola
King, H. I.....Aberdeen
King, Owen.....Aberdeen

Kjerland, T. N.....Webster
Lavery, C. J.....Aberdeen
McAdams, J. E.....Morristown
McCauley, C. E.....Aberdeen
Mertens, J. J.....Gettysburg
Miller, E. O.....Aberdeen
Miller, Frank.....Aberdeen
Miller, J. F.....Andover
Miller, V. M.....Melleite
Murdy, B. C.....Aberdeen
Murphy, T. W.....Pierpont
Olson, C. O.....Groton
Peabody, Percy.....Webster
Potter, Geo. W.....Redfield
Pugh, G. F.....Stratford
Rock, H. J.....Sioux Falls
Rosenthal, Sigmond.....Java
Seeman, C. A.....Tulare
Seeman, H. J.....Rockham
Sorenson, A. A.....Aberdeen
Sutton, Dewey.....Redfield
Totten, F. C.....Lemmon
Twining, G. H.....Mobridge
White, W. E.....Ipswich
Whiteside, J. D.....Aberdeen

WATERTOWN DISTRICT MEDICAL SOCIETY—NO. 2

PRESIDENT
Parsons, H. C.....Watertown

SECRETARY
Hammond, M. J.....Watertown
Abbott, G. A.....Watertown
Ash, James C.....Garden City
Bartron, H. J.....Watertown
Bates, J. S.....Clear Lake
Benner, W. J.....Willow Lake

Burlingame, R. M....Watertown
Campbell, R. F.....Watertown
Church, E. O.....Revello
Crawford, J. H.....Castlewood
Edsall, J. L.....Wallace
Finnerud, H. M....Watertown
Freeburg, H. M....Watertown
Frink, O. G.....South Shore
Giere, E. O.....Watertown

Haraldson, O. A....Watertown
Hendricson, Paul.....Vienna
Hill, L. G.....Watertown
Johnson, A. E.....Watertown
Koran, Finn.....Watertown
Kriesel, W. A.....Watertown
Lockwood, J. H.....Garden City
McIntyre, P. S.....Bradley
Magee, W. G.....Watertown

Mullen, R. W.....Florence
O'Bryan, H. J.....Watertown
O'Toole, C. S.....Watertown
Ramsey, E. T.....Clark

Richards, G. H.....Clear Lake
Sherwood, H. W.....Doland
Simpson, E. D.....Watertown
Smith, S. W.Watertown
Staley, F. H.....Hazel

Tarbell, H. A.....Watertown
Vaughn, J. B.....Castlewood
Westaby, J. R.....Clark
Williams, C. A.Doland

LAKE PRESTON DISTRICT MEDICAL SOCIETY—NO. 3

PRESIDENT

Grove, E. H.....Arlington

SECRETARY

Grosvenor, L. N.....Huron
Allison, B. S.....Lake Preston
Amsberry, A. L.Erwin
Bailey, N. L.Lake Preston
Baker, J. C.....Ramona
Barthell, J. F.....Winfred
Bostrom, A. E.De Smet
Cowgill, C. H.....Iroquois
Crafts, EarlCarthage

Dyar, B. A.....De Smet
Fisk, R. R.....Brookings
Frudenberg, H. H.....Madison
Garrison, John F.Oldham
Green, B. T.....Brookings
Hopkins, N. K.....Arlington
Hoyde, C. H. R.....Madison
Leach, W. O.....Huron
Long, G. J.....Oldham
McKie, J. F.....Wessington
Noble, A. G.....Howard

Noble, H. B.Howard
Scanlan, D. L.....Volga
Schwendener, J. E.....Bryant
Sheets, O. B.....Carthage
Shirley, J. C.....Huron
Sprague, B. H.....Huron
Taylor, E. B.Huron
Thomas, Benj.Huron
Torwick, E. E.....Volga
Westaby, R. S.....Madison
Wood, T. J.Huron
Wright, O. R.Huron

PIERRE DISTRICT MEDICAL SOCIETY—NO. 4

PRESIDENT

Riggs, T. F.....Pierre

SECRETARY

Youngs, A. H.....Pierre

Hollister, C. M.....Pierre
Kenney, H. T.....Pierre
Kyde, S. M.....Philip

Langsdale, G. H.....Highmore
Martin, H. B.....Harrold
Minard, R. W.....Midland
Walsh, J. N.....Rapid City

MITCHELL DISTRICT MEDICAL SOCIETY—NO. 6

PRESIDENT

Bobb, C. S.....Mitchell

SECRETARY

Gillis, F. D.....Mitchell
Ball, W. R.....Mitchell
Benckleman, W. H.....Stickney
Black, Wm.Gaylord, Minn.
Bobb, B. A.....Mitchell
Bobb, E. V.....Mitchell
Bower, Chas. A.....Mitchell
Bright, H. F.White Lake
Buffaloe, A. J.....Mitchell
Burnes, P. E.....Alpena
Clauser, G. A.....Bridgewater
Delaney, W. A.....Mitchell
Dunn, A. B.Chamberlain

Gifford, A. J.Alexandria
Hoyne, A. H.....Salem
Hunt, W. M.....Draper
Jenkinson, H. E.....
.....Wessington Springs
Jones, E. W.....Mitchell
Just, Guy H.....Pukwana
Kammerling, Theo.Spencer
Kelly, R. A.....Mitchell
Kidd, F. S.Woonsocket
Kimble, O. A.....Murdo
LaShier, B. W.....Armour
McClellan, S. A.....Kennebeck
McManus, ClaraCenterville
Mahin, F. M.....Canova

Maytum, W. J.....Alexandria
Ramsey, Guy.....Salem
Reynolds, W. P.....
.....Stevensville, Mont.
Rogers, J. C.....White Lake
Smiley, T. B.....Mt. Vernon
Sprecher, Samuel.....Tripp
Stewart, F. H.Kimball
Stewart, T. M.Mitchell
StockdaleEthan
Templeton, C. V.....Woonsocket
Treon, Fred.....Chamberlain
Wager, E. N.....Bijou Hills
Waldner, J. L.....Parkston
Wilson, F. D.....Armour
Young, E. M.....Plankinton

SIOUX FALLS DISTRICT MEDICAL SOCIETY—NO. 7

PRESIDENT

Hummer, H. R.....Canton

SECRETARY

Zimmerman, Goldie...Sioux Falls
Billion, T. J.....Sioux Falls
Bliss, G. W.....Valley Springs
Bliss, P. D.....Colton
Bower, C. F.....Hartford
Brandon, P. E.....Sioux Falls
Brown, S. A.....Sioux Falls
Butler, C. A.....Dell Rapids
Clark, J. C.Sioux Falls
Cottam, G. G.....Sioux Falls
Craig, D. W.....Sioux Falls
Culver, C. F.....Sioux Falls
Devall, F. C.....Garretson
Dickinson, W. C.....Canastota
Donahoe, S. A.Sioux Falls
Donahoe, W. E.....Sioux Falls
Eagan, J. B.....Dell Rapids
Egan, M. H.....Sioux Falls

Gage, E. E.....Sioux Falls
Grove, A. F.....Dell Rapids
Grove, M. M.....Dell Rapids
Hanson, O. L.....Sioux Falls
Housman, W. McK. Dell Rapids
Hyden, A.Alcester
Jones, T. E.Sioux Falls
Joyce, E.Hurley
Keller, S. A.....Sioux Falls
Keller, W. F.....Sioux Falls
Klaviness, E. Minneapolis, Minn.
Lewison, EliCanton
Moore, W. E.....Sioux Falls
Nessa, N. J.....Sioux Falls
Parke, L. L.Canton
Parsons, J. G.....Sioux Falls
Perkins, E. L.....Sioux Falls
Price, E. F.....Alcester
Putnam, E. D.....Sioux Falls
Putnam, F. I.....Sioux Falls
Reagan, R.Garretson
Rider, A. S.....Flandreau

Roberts, W. P.....Sioux Falls
Rundlett, D. L.....Sioux Falls
Schwartz, Jos.....Sioux Falls
Sherwood, H. H.....Humbolt
Skogen, T. T.....Flandreau
Smedley, Irene.....Sioux Falls
Sorenson, M. C.....Sioux Falls
Spafford, F. A.....Flandreau
Stern, M. A.....Sioux Falls
Stevens, G. A.....Sioux Falls
Stevens, R. G.....Sioux Falls
Subera, H. W.....Sioux Falls
Thompson, T. G.....Sioux Falls
Trail, C. J.....Sioux Falls
Tufts, A. H.....Sioux Falls
Valkenaar, F. W.....Chancellor
Van Demark, G. E...Sioux Falls
Vaughn, L. B.....Hurley
Wildish, R. M.....Worthing
Zetlitz, ArneSioux Falls
Zetlitz, K. A. L.....Sioux Falls

YANKTON DISTRICT MEDICAL SOCIETY—NO. 8

PRESIDENT	
Hohf, J. A.	Yankton
SECRETARY	
Roane, James	Yankton
Adams, G. S.	Yankton
Anderson, E. T.	Platte
Augspurger, E. D.	Menno
Beall, L. F.	Irene
Berry, S. G.	Tyndall
Bigler, Lottie G.	Armour
Blezek, F. M.	Tabor
Burkland, P. R.	Vermillion
Bushnell, Wm. F.	Elk Point
Campbell, C. A.	Wagner
Collisi Nicolas	Vermillion
Cruikshank, Thos.	Vermillion
Duguid, J. O.	Springfield
Eagon, Alonzo	Yale

Elliott, A. V.	Beresford
Ellis, John	Elk Point
Eyman, E. V.	Yankton
Frink, R. P.	Wagner
Greenfield, J. C.	Avon
Gross, C. C.	Yankton
Herzberg, Mortimer	Vermillion
Hohf, S. M.	Yankton
Isaac, J. P.	Freeman
Kalayjian, D. S.	Parker
Kaufmann, E. J.	Marion
Keeling, C. M.	Springfield
Klima, Hermanigald.	Tyndall
Koobs, H. J. G.	Scotland
Landmann, G. A.	Scotland
Langley, C. S.	Lake Andes
Mead, L. C.	Yankton
Moore, D. V.	Yankton

Moore, F. A.	Lesterville
Morehouse, E. M.	Yankton
Murphy, Jennie C.	Yankton
Newby, H. D.	Parker
Payne, R. H.	Tripp
Pinard, P. H. A.	Jefferson
Pinard, P. R.	Wagner
Posthuma, Anne	Centerville
Sedlacek, F. A.	Omaha, Neb
Smith, F. C.	Yankton
Stansbury, E. M.	Vermillion
Stewart, J. L.	Pringle
Stiffler, M. L.	Yankton
Struble, A. J.	Centerville
Swezey, F. A.	Wakonda
Toohey, A. F.	Beresford
Willhite, F. V.	Yankton
Wipf, A. A.	Freeman

BLACK HILLS DISTRICT MEDICAL SOCIETY—NO. 9

PRESIDENT	
Minty, F. W.	Rapid City
SECRETARY	
Richards, F. A.	Whitewood
Allen, A. G.	Deadwood
Ashcroft, F. E.	Deadwood
Brooks, J. D.	Sturgis
Chassell, J. L.	Belle Fourche
Clough, F. E.	Lead
Crane, H. L.	Lead

Fasser, A. O.	Belle Fourche
Fleege, R. B.	Lead
Freeman, J. W.	Lead
Hare, Lyle	Spearfish
Hargens, C. W.	Hot Springs
Howe, F. S.	Deadwood
Hultz, Eugene B.	Hill City
Ince, J. T.	Rapid City
Jackson, A. S.	Lead
Jackson, R. J.	Rapid City

McLaurin, A. A.	Rapid City
Markel, I. J.	Lead
Martin, J. H.	Lead
Mattison, J. A.	Hot Springs
Moffit, T. W.	Deadwood
Northrup, F. A.	Interior
Owens, N. T.	Nemo
Pemberton, M. O.	Deadwood
Robinson, W. E.	Rapid City
Schneerer, F. B.	Deadwood

ROSEBUD DISTRICT MEDICAL SOCIETY—NO. 10

PRESIDENT	
Kenaston, H. R.	Bonesteel
SECRETARY	
Bryant, F. A.	Herrick
Claggett, M. H.	Fairfax

Hofer, M. M.	Dallas
Kimball, A. P.	Colome
Miller, J. L.	Winner
Murnan, H. A.	Gregory
Overton, R. V.	Dixon
Quinn, R. J.	Burke

Quinn, W. M.	Winner
Swett, Chas. H.	Winner
Waterman, J. C.	Burke
Winsett, W. E.	Dallas
Womeldorf, J. M.	Dallas

ALPHABETICAL ROSTER

Abbott, G. A.	Watertown
Adams, B. A.	Bristol
Adams, G. S.	Yankton
Adams, J. F.	Aberdeen
Aldrich, H. H.	Wessington
Allen, A. G.	Deadwood
Allison, B. S.	Lake Preston
Alway, R. D.	Aberdeen
Amsberry, A. L.	Erwin
Anderson, E. T.	Platte
Ash, James C.	Garden City
Ashcroft, F. E.	Deadwood
Augspurger, E. D.	Menno
Bailey, F. C.	Redfield
Bailey, N. L.	Lake Preston
Baker, J. C.	Ramona
Baldwin, F. M.	Redfield
Ball, W. R.	Mitchell
Barthell, J. F.	Winfred
Bartron, H. J.	Watertown
Bates, J. S.	Clear Lake
Beall, L. F.	Irene
Bear, T. H.	Timber Lake
Beil, A.	Selby

Benckleman, W. H.	Stickney
Benner, W. J.	Willow Lake
Berry, S. G.	Tyndall
Bigler, Lottie G.	Armour
Billion, T. J.	Sioux Falls
Black, Wm.	Gaylord, Minn.
Blezek, F. M.	Tabor
Bliss, G. W.	Valley Springs
Bliss, P. D.	Colton
Bobb, B. A.	Mitchell
Bobb, Clyde S.	Mitchell
Bobb, E. V.	Mitchell
Bostrom, A. E.	De Smet
Bower, Chas. A.	Mitchell
Bower, C. F.	Hartford
Brandon, P. E.	Sioux Falls
Bright, H. F.	White Lake
Brooks, J. D.	Sturgis
Brosseau, J. E.	Frankfort
Brown, A. E.	Webster
Brown, S. A.	Sioux Falls
Bruner, J. E.	Frederick
Bryant, F. A.	Herrick
Buffaloe, A. J.	Mitchell

Burkland, P. R.	Vermillion
Burlingame, R. M.	Watertown
Burnes, P. E.	Alpena
Bushnell, Wm. F.	Elk Point
Butler, C. A.	Dell Rapids
Campbell, C. A.	Wagner
Campbell, R. F.	Watertown
Carpenter, G. S.	Bowdle
Chassell, J. L.	Belle Fourche
Church, E. O.	Revello
Claggett, M. H.	Fairfax
Clark, J. C.	Sioux Falls
Clauser, G. A.	Bridgewater
Clough, F. E.	Lead
Collisi Nicolas	Vermillion
Cook, J. F. D.	Langford
Cottam, G. G.	Sioux Falls
Countryman, G. E.	Aberdeen
Cowgill, C. H.	Iroquois
Crafts, Earl	Carthage
Craig, D. W.	Sioux Falls
Crain, F. M.	Redfield
Crane, H. L.	Lead

Crawford, J. H.	Castlewood	Holmes, Chas. F.	Hecla	Markel, I. J.	Lead
Creamer, F. H.	Dupree	Homan, C. A.	Aberdeen	Martin, H. B.	Harrold
Cruikshank, Thos.	Vermillion	Hopkins, N. K.	Arlington	Martin, J. H.	Lead
Culver, C. F.	Sioux Falls	Howe, F. S.	Deadwood	Mattison, J. A.	Hot Springs
Curtis, J. E.	Lemmon	Hoyde, C. H. R.	Madison	Maytum, W. J.	Alexandria
Delaney, W. A.	Mitchell	Hoyne, A. H.	Salem	Mead, L. C.	Yankton
Devall, F. C.	Garretson	Housman, W. McK.	Dell Rapids	Mertens, J. J.	Gettysburg
Devereaux, T. J.	Aberdeen	Hultz, Eugene B.	Hill City	Miller, E. O.	Aberdeen
Dickinson, W. C.	Canastota	Hummer, H. R.	Canton	Miller, Frank.	Aberdeen
Dinsmore, W. E.	Claremont	Hunt, W. M.	Draper	Miller, J. F.	Andover
Donahoe, S. A.	Sioux Falls	Hyden, A.	Alcester	Miller, J. L.	Winner
Donahoe, W. E.	Sioux Falls	Ince, J. T.	Rapid City	Miller, V. M.	Mellette
Duguid, J. O.	Springfield	Isaac, J. P.	Freeman	Minard, R. W.	Midland
Dunn, A. B.	Chamberlain	Jackson, A. S.	Lead	Minty, F. W.	Rapid City
Dunn, J. E.	Groton	Jackson, E. B.	Aberdeen	Moffit, T. W.	Deadwood
Dyar, B. A.	De Smet	Jackson, R. J.	Rapid City	Moore, D. V.	Yankton
Eagan, J. B.	Dell Rapids	Jacotel, J. A.	Milbank	Moore, F. A.	Lesterville
Eagon, Alonzo	Yale	Jenkins, P. B.	Waubay	Moore, W. E.	Sioux Falls
Edsall, J. L.	Wallace	Jenkinson, H. E.	Wessington Springs	Morehouse, E. M.	Yankton
Edwards, Wm.	Bowdle	Johnson, A. E.	Watertown	Mullen, R. W.	Florence
Egan, M. H.	Sioux Falls	Johnston, M. C.	Aberdeen	Murdy, B. C.	Aberdeen
Elliott, A. V.	Beresford	Jones, E. W.	Mitchell	Murdy, R. L.	Aberdeen
Ellis, John	Elk Point	Jones, R. R.	Britton	Murphy, T. W.	Pierpont
Eyman, E. V.	Yankton	Jones, T. E.	Sioux Falls	Murnan, H. A.	Gregory
Farrell, W. D.	Aberdeen	Joyce, E.	Hurley	Murphy, Jennie C.	Yankton
Fasser, A. O.	Belle Fourche	Just, Guy H.	Pukwana	Nessa, N. J.	Sioux Falls
Ferguson, W. J.	Milbank	Kalayjian, D. S.	Parker	Newby, H. D.	Parker
Field, L. M.	Aberdeen	Kammerling, Theo.	Spencer	Noble, A. G.	Howard
Fiksdal, M. J.	Webster	Kaps, F. O.	Britton	Noble, H. B.	Howard
Finnerud, H. M.	Watertown	Kaufmann, E. J.	Marion	Northrup, F. A.	Interior
Fisk, R. R.	Brookings	Keeling, C. M.	Springfield	O'Bryan, H. J.	Watertown
Fleeger, R. B.	Lead	Keller, S. A.	Sioux Falls	O'Toole, C. S.	Watertown
Freeburg, H. M.	Watertown	Keller, W. F.	Sioux Falls	Olson, C. O.	Groton
Freeman, J. W.	Lead	Kelly, R. A.	Mitchell	Overton, R. V.	Dixon
Freyberg, F. W.	Aberdeen	Kenaston, H. R.	Bonesteel	Owens, N. T.	Nemo
Frink, O. G.	South Shore	Kenney, H. T.	Pierre	Parke, L. L.	Canton
Frink, R. P.	Wagner	Kerns, G. G.	Leola	Parsons, H. C.	Watertown
Frudenberg, H. H.	Madison	Kettner, J. C.	Leola	Parsons, J. G.	Sioux Falls
Gage, E. E.	Sioux Falls	Kidd, F. S.	Woonsocket	Payne, R. H.	Tripp
Garrison, John F.	Oldham	Kimble, O. A.	Murdo	Peabody, Percy	Webster
Giere, E. O.	Watertown	Kimball, A. P.	Colome	Pemberton, M. O.	Deadwood
Gifford, A. J.	Alexandria	King, H. I.	Aberdeen	Perkins, E. L.	Sioux Falls
Gillis, F. D.	Mitchell	King, Owen	Aberdeen	Pinard, P. H. A.	Jefferson
Green, B. T.	Brookings	Kjerland, T. N.	Webster	Pinard, P. R.	Wagner
Greenfield, J. C.	Avon	Klaviness, E.	Minneapolis, Minn.	Potter, Geo. W.	Redfield
Gross, C. C.	Yankton	Klima, Hermanigald.	Tyndall	Posthuma, Anne	Centerville
Grosvenor, L. N.	Huron	Koobs, H. J. G.	Scotland	Price, E. F.	Alcester
Grove, A. F.	Dell Rapids	Koran, Finn	Watertown	Pugh, G. F.	Stratford
Grove, E. H.	Arlington	Kraushaar, F. J.	Aberdeen	Putnam, E. D.	Sioux Falls
Grove, M. M.	Dell Rapids	Kriesel, W. A.	Watertown	Putnam, F. I.	Sioux Falls
Hammond, M. J.	Watertown	Kyde, S. M.	Philip	Quinn, R. J.	Burke
Hanson, O. L.	Sioux Falls	Landmann, G. A.	Scotland	Quinn, W. M.	Winner
Haraldson, O. A.	Watertown	Langley, C. S.	Lake Andes	Ramsey, E. T.	Clark
Hare, Lyle	Spearfish	Langsdale, G. H.	Highmore	Ramsey, Guy	Salem
Hargens, C. W.	Hot Springs	LaShier, B. W.	Armour	Reagan, R.	Garretson
Harris, H. G.	Wilnot	Lavery, C. J.	Aberdeen	Reynolds, W. P.	Stevensville, Mont.
Hart, B. M.	Onida	Leach, W. O.	Huron	Richards, G. H.	Clear Lake
Hart, Robert	Groton	Lewison, Eli	Canton	Richards, F. A.	Whitewood
Hendricson, Paul.	Vienna	Lockwood, J. H.	Garden City	Rider, A. S.	Flandreau
Herman, H. J.	Webster	Long, G. J.	Oldham	Riggs, T. F.	Pierre
Herman, J. D.	Conde	McAdams, J. E.	Morristown	Roane, James	Yankton
Herzberg, Mortimer.	Vermillion	McCaulley, C. E.	Aberdeen	Roberts, W. P.	Sioux Falls
Hill, L. G.	Watertown	McClellan, S. A.	Kennebeck	Robinson, W. E.	Rapid City
Hill, Robert	Ipswich	McIntyre, P. S.	Bradley	Rock, H. J.	Sioux Falls
Hoagland, C. C.	Veblen	McKie, J. F.	Wessington	Rogers, J. C.	White Lake
Hofer, M. M.	Dallas	McLaurin, A. A.	Rapid City	Rosenthal, Sigmond	Java
Hohf, J. A.	Yankton	McManus, Clara	Centerville	Rundlett, D. L.	Sioux Falls
Hohf, S. M.	Yankton	Magee, W. G.	Watertown	Scanlan, D. L.	Volga
Hollister, C. M.	Pierre	Mahin, F. M.	Canova	Schneerer, F. B.	Deadwood
Holmes, A. E.	Verdon			Schwartz, Jos.	Sioux Falls

Schwendener, J. E.....Bryant
 Sedlacek, F. A.....Omaha, Neb
 Seeman, C. A.....Tulare
 Seeman, H. J.Rockham
 Sheets, O. B.Carthage
 Sherwood, H. H.Humbolt
 Sherwood, H. W.Doland
 Shirley, J. C.Huron
 Simpson, E. D.Watertown
 Skogen, T. T.Flandreau
 Sorenson, A. A.Aberdeen
 Sorenson, M. C.Sioux Falls
 Smedley, Irene.....Sioux Falls
 Smiley, T. B.Mt. Vernon
 Smith, F. C.Yankton
 Smith, S. W.Watertown
 Spafford, F. A.Flandreau
 Sprague, B. H.Huron
 Sprecher, Samuel.....Tripp
 Staley, F. H.Hazel
 Stansbury, E. M.Vermillion
 Stern, M. A.Sioux Falls
 Stevens, G. A.Sioux Falls
 Stevens, R. G.Sioux Falls

Stewart, F. H.Kimball
 Stewart, J. L.Pringle
 Stewart, T. M.Mitchell
 Stiffler, M. L.Yankton
 StockdaleEthan
 Struble, A. J.Centerville
 Subera, H. W.Sioux Falls
 Sutton, DeweyRedfield
 Swett, Chas. H.Winner
 Swezey, F. A.Wakonda
 Tarbell, H. A.Watertown
 Taylor, E. B.Huron
 Templeton, C. V.Woonsocket
 Thomas, Benj.Huron
 Thompson, T. G.Sioux Falls
 Tookey, A. F.Beresford
 Torwick, E. E.Volga
 Totten, F. C.Lemmon
 Trail, C. J.Sioux Falls
 Treon, Fred.Chamberlain
 Tufts, A. H.Sioux Falls
 Twining, G. H.Mobridge
 Valkenaar, F. W.Chancellor
 Van Demark, G. E.Sioux Falls

Vaughn, J. B.Castlewood
 Vaughn, L. B.Hurley
 Wager, E. N.Bijou Hills
 Waldner, J. L.Parkston
 Walsh, J. N.Rapid City
 Waterman, J. C.Burke
 Westaby, J. R.Clark
 Westaby, R. S.Madison
 White, W. E.Ipswich
 Whiteside, J. D.Aberdeen
 Wildish, R. M.Worthing
 Willhite, F. V.Yankton
 Williams, C. A.Doland
 Wilson, F. D.Armour
 Winsett, W. E.Dallas
 Wipf, A. A.Freeman
 Womeldorf, J. M.Dallas
 Wood, T. J.Huron
 Wright, O. R.Huron
 Youngs, A. H.Pierre
 Young, E. M.Plankinton
 Zimmerman, Goldie...Sioux Falls
 Zetlitz, ArneSioux Falls
 Zetlitz, K. A. L.Sioux Falls

PRESIDENT'S ADDRESS

By F. M. CRAIN, M. D.

REDFIELD, SOUTH DAKOTA

Gentlemen of the South Dakota State Medical Association:

I welcome you to this, our thirty-sixth annual meeting. May I not at the beginning bespeak the most profitable and interesting meeting in the history of our Association?

I should be wanting in gratitude, and grossly insensible to the great honor, did I not, at this time, express my grateful thanks for the honor you so generously conferred on me one year ago, when you elected me your presiding officer. I do not flatter myself, however, that this distinction came to me as it did, unasked for, in consequence of any special fitness for the position, but, rather, because of the long and active interest I have taken in our Association. Having missed attending but few of our annual meetings during its entire history, I am in position to recall some of the trials and ordeals that have marked the pathway over which our Association has traveled for over a third of a century.

In looking over our list of members, I find the names of but few physicians who were active members when I first became a member of the Association. Most of those who composed the early membership have grown weary in the good work, have laid down by the wayside,—fallen asleep, that long sleep that knows no waking. Others will follow in rapid succession until the

last of those sturdy pioneer physicians who laid well the foundations of this Association, shall have passed away.

But what of the future of our Association? There can be no doubt as to its future! Those who follow cannot but receive greater inspiration as the field of our professional usefulness enlarges, and individual professional efficiency is required to keep abreast with the rapid advancement of our chosen profession. Those who recall the labors and sacrifices of the pioneer physicians who brought this Association into existence, will see to it that no backward step is taken. On the contrary, I am reasonably sure that the Association will grow in usefulness until the list of members shall contain, as it should, the name of every honorable physician within the state.

The problems of a public nature in which the medical profession must take the leading part, are increasing from one decade to another. They are problems that concern vitally the social, industrial, and economic welfare of our state. From the earliest period in the life of the individual until the tragedy that marks the end, their destiny is directed by the medical profession.

When we consider that our duties consist, not only in rendering service to our individual patients, but in many cases a greater service to the

State, for which we receive no compensation, I think we can see the importance of interesting ourselves in legislation for the interest of public health and our own protection.

When we review the history of medicine from Hippocrates to the present time, we find that more progress in medicine has been made during the period covered by professional life of members of our profession now in active practice, in placing the profession on a scientific foundation, than was accomplished in the previous two thousand years.

We cannot refer too often to the life-work of such men as Koch, Pasteur, Ehrlich, and scores of others, whose achievements are the foundation of scientific medicine. The establishing of the fact that all infectious and contagious diseases are of bacterial origin opened up a vast field, and is the basis of preventive medicine. The presence or absence of preventable disease is therefore looked upon as an index to the intelligence of the community.

The conservation of the health of our people, the cure and prevention of disease, and the relief of physical and mental pain, are the work to which a physician must consecrate his life. There is no more honorable calling open to man, nor one that calls for more sacrifices, than ours. It is interesting to recall that during its long history the profession has ever been true to its ideals. No epidemic, no matter how deadly its progress, that did not find members of our profession on the field, administering succor to the sick and dying. On the battle-fields of Europe, where the engines of death that have taxed the ingenuity of inventive minds, are killing and maiming millions of our fellow-men, you will find our profession discharging the obligation it owes to humanity. It is a source of gratification that our Association is furnishing volunteers for this great work.

Time and space allowed for discourses of this nature will not permit more than the mere mention of a few of the many fields of labor in which our profession must take the leading part. Preventive medicine, industrial and health insurance, occupational diseases, school-inspection, sanitary science, tropical diseases, and all ramifications of sociological medicine, open up a limitless field in which only the specialist in the various branches can render such service as the importance of the subject demands.

The field that has received the least attention from the profession, and the one that offers the

best results affecting the welfare of the State, is that of school-inspection. The importance of requiring a rigid health survey of the school children, particularly those entering for the first and second years of school work, cannot be overestimated. In order to make school-inspection effective, a vast amount of education of the general public will be necessary. In this work educators, school-officers and physicians must co-operate. A vast amount of opposition will come from ignorance and religious prejudice of the people. It goes without saying that the greater the opposition, the more necessary the inspection. So-called religious and personal freedom, much prized possessions, count but little when the welfare of the whole populace is at stake.

That there is a large percentage of our school children physically and mentally defective, there can be no question. Allowing them to be enrolled in our schools without examination, and correction of defects, when possible, should not be allowed. Many pupils are unable to make their grades, due entirely to physical defects that could easily be remedied. To withhold from these unfortunate children the benefit of science, which, if employed, would enable them to develop normally, is a crime against civilization. From an inhumanitarian standpoint I can recall no parallel.

The indiscriminate presence of defective children in our schools menaces the health, and retards the progress, of normal children. From a financial standpoint, it cannot be other than a distinct loss. Defective children should not be allowed to interfere with the progress of normal children, but should be classified and treated separately, and educated along lines that their physical and mental condition would suggest.

But few localities have adopted school-inspection, and in these cases without legal authority, so we possess no data from which to make an intelligent guess as to the percentage of defective children in our schools. We need but to visit the grades of our public schools to convince us that a large percentage of the pupils are physically defective. The stigmata of pathologic tonsils, adenoids, tuberculosis, and other local and constitutional diseases are manifest from the general appearance, and require no careful examination to convince us that a large percentage are defective. These unfortunate students at the end of their school period enter their life-work greatly handicapped. Physically and mentally they are unable to compete with normal students.

They are only partially self-supporting, and in time many of them become a charity charge, instead of an asset, to the community, all for the want of proper treatment during their school life.

The report of an officer in the United States Marine Corps shows the astounding fact that out of 11,012 applicants for enlistment only 316 reached the physical standard required for this service. It is safe to say that many of the defects which rendered more than 70 per cent ineligible for the Marine service, could have been removed during the developing period.

There is another problem of still greater importance that renders inspection of school children not only desirable but obligatory, if we would render to humanity the service that we are not only prepared, but anxious, to give. I refer to the mental condition of our school children. When we visit the charitable and penal institutions of our state and see hundreds of demented inmates, some of them low-grade idiots, the offspring of feeble-minded parents, and realize that feeble-mindedness is distinctly hereditary, we should seriously contemplate the importance of locating early in their life those that have mental defects, educating them in separate schools, and, as far as possible, preparing them for work their condition would permit.

As a matter of precaution against the increase of feeble-minded children from mentally defective parents, the question of rendering sterile all feeble-minded persons of child-bearing age, thus removing the greatest source of recruits to this large and increasing army of mental defectives, must appear obvious to all. Congenital mental defects among our school children exist to an alarming degree. Estimates have been made that among the general population as high as 4 per cent are to some extent feeble-minded. If this percentage is correct, with no restriction upon marriage among this class of people, it takes no unreasonable flight of imagination to see a rapid increase of this unfortunate class.

The principal determining factors in the life of mankind are heredity and environments. The former is not within the pale of legislative control, although much can be accomplished by limiting the propagation of defectives.

That heredity stamps indelibly on the offspring many traits of character, as well as physical, mental, and moral defects of the parent, abundant evidence is at hand. Perhaps the most striking example of heredity in the human family, is that of feeble-mindedness. It has been estimated that

80 per cent of mental defectives are children where one or both parents were feeble-minded. Where careful records have been kept it has been shown that, when both parents are feeble-minded, their children, with scarcely an exception, are of the same class, with a strong tendency of lowering the degree of mentality.

In Virginia they report 468 descendants of a feeble-minded woman, and of these descendants 311 were investigated, and there were found 310 mentally defectives. This is the greatest source from which the recruits are drawn, who fill to overflowing our charitable and penal institutions. Many of the crimes that are committed are the legitimate results of a perverted mind, left to drift in channels of least resistance easily influenced by vicious associates without the restraining influence of proper environment.

How long are we to remain insensible to this heavy and increasing drain on the moral, intellectual, physical, and financial welfare of our state?

In order to make the most of a bad case, those who are known to be feeble-minded should be given the benefit of the best surroundings. They should be classified and educated (where education offers any hope of improvement) in separate schools, and by teachers who have made a study of these unfortunate children, many of whom can be made self-supporting.

The sociological aspect of this subject should be carefully considered. Legislation prohibiting marriage of mentally defectives, and sterilization of all who are not under strict surveillance in well-managed institutions, offer the greatest opportunity to check the rapid increasing of feeble-mindedness.

As Americans, we are prone to regard individual freedom too seriously; in doing so we lose sight of the principle,—the greatest good to the greatest number. Sentiment in dealing with this great subject should not be allowed to dwarf our efforts to handle the subject fearlessly and for the best interest of future generations.

I trust I may be pardoned for digressing from this subject, and briefly referring to another, which to my knowledge has never been considered in an address by any of my predecessors. I feel that it is a legitimate matter for consideration and recommendation from the president of any state association.

It has been generally considered that little or nothing could be done during the interim between our annual meetings in the interest of our Asso-

ciation. I accepted the presidency of this Association a year ago, with a conviction, which I have long entertained, that our Association should put forth an effort to secure proper legislation governing health matters, and a law that would make it easier to convict violators of our medical-practice act.

This opens up the question of the profession engaging in politics. I am firm in the belief that we should not, not for the purpose of gratifying the political ambition of any of our members, if there are any who have political aspirations, but for the sole purpose of aiding in the election of men for the various offices whose sympathies are in the interest of better health laws and a rigid enforcement of the laws.

Our present health laws and the medical-practice act, if they could be rigidly enforced, would not be so bad, yet it is a humiliating fact that in some places in the state violators of our medical-practice act are permitted to impose on the public. There are dozens of men in active practice in the state who have no authority to practice. They are openly and brazenly violating our laws, and in some places it has been found impossible to convict them.

Your officers early in the year made an effort to induce our members to engage actively in the campaign, in the interest of electing men to the legislature and for state and county offices, who at least were not in open antagonism to our profession. The State imposes upon our profession the guardianship of public-health matters, and it is not unreasonable that we should be heard when the time comes for legislating on matters pertaining to public health.

Accordingly letters were sent to the members of our Association urging them to use their influence in the interest of candidates, regardless of political affiliations, who would favor strict health laws. While a few members became active, and good results followed, I regret that there were not the efforts put forth that there should have been when issues of such vital importance were at stake. The old-established custom of our Association not to dabble in politics was so strong that many of our members hesitated to engage in the work.

I believe that activity in politics, from the earliest engagement in a political campaign, in the interest of all legislation affecting the health of our state, should become a fixed policy of this Association. It will be remembered that, during the legislative session two years ago, the Chiro-

practors succeeded in having a bill legalizing their system of practice pass the House. Little was done by the profession until it reached the Senate. By hard work on the part of our Association it was defeated in the Senate. Had it passed both houses there is little doubt but that the bill would have received the governor's signature.

When the session of the legislature opened last winter, we found, as we expected, the Chiropractors early on the ground with their paid attorneys lobbying for their bill. The work we did during the campaign began to bear fruit, and by hard work we succeeded in defeating their bill. After reconsideration with the same results, no further effort was made to pass the bill.

By a careful investigation during the year, of the method of the Chiropractic colleges in securing students, and the very limited amount of work required to procure a degree (?) I am convinced that the demand for a law legalizing this system of practice comes from these colleges, and the expense of lobbying is, in the main part, paid by them. These colleges, with propriety, might be classed as diploma mills, for the degrees they confer mean nothing except the idea conveyed to the unthinking public that degrees issued from a chartered institution are supposed to be evidence that the recipient has acquired a considerable degree of learning. It is an easy matter for a school to procure from the State a charter, and when once secured the State has no jurisdiction except to annul the charter when used to deceive the public. Every State issuing a charter to an institution of learning should demand a standard for degrees equal to our universities. Then we could rest assured that one who holds a degree from a college is entitled to recognition.

The experience of the profession in the state of Oregon was quite different from ours. The Oregon Legislature passed without opposition a Chiropractic bill. The governor signed it! No sooner had he affixed his signature than a mighty protest went up from the medical profession. The governor informed them that the bill passed both houses without any opposition, came to him, and not a member of the profession interposed an objection to his signing it. This forcibly illustrates the importance of our profession engaging in politics for its own protection and that of the public.

Since the State demands of the profession a high standard of efficiency, and regards it as guardian of the health of the people, it is not

unreasonable to ask that all who are authorized by law to heal the sick and perform other duties of a public and semipublic nature that are demanded of us, should possess the same standard of learning in all branches of our profession, with the exception of methods of treatment.

The ability to make a correct diagnosis early, especially in contagious diseases, while important in conducting a course of treatment, is far more important from the standpoint of preventive medicine.

To legalize a system of treating diseases that have a very low standard in the fundamentals of medicine, which are so important, not only for treating diseased conditions, but in preventing the spreading of contagion, is the essence of folly. All who are permitted, either in whole or in part, to exercise the function of the medical profession, should be required to possess the same standard of efficiency in the fundamentals of medicine that the State requires of our profession.

I favored the introduction of such a bill in our last legislature, but for fear we should be unsuccessful we concluded to make some slight amendments to our present act, and wait until some future time for this kind of a law.

It is not too early to begin to make our influence felt with those who seek political honors. With a membership of more than four hundred educated earnest physicians, scattered as they are throughout our state, working in harmony for the single purpose of influencing legislation in the interest of conservation of human life, success will surely follow.

The legislation passed during the recent ses-

sion of our Legislature, while not what we hoped for, yet was a step forward, and paves the way to something better in the future. One of the amendments to our present medical-practice act makes the violation of the law a misdemeanor. This removes cases from the jurisdiction of the justice court to that of the circuit court. This no doubt will prove a tremendous advantage in prosecuting violators of the law, and will make it much easier to convict them.

Where attempts have been made to bring to justice violators of our medical-practice act, it has been found quite impossible to convict. To bring these cases out of the justice courts and try them in the district courts will, I believe, clear our state of violators of our laws. When this amendment becomes operative, I believe we should make a systematic effort to bring to justice all violators of our medical law. If we do not do this, I see no real reason why we should retain the law on our statute book. The legislature also provided for free distribution of antitoxin among the physicians of the state.

I believe a large majority of the men who compose our legislative body are men who earnestly desire to treat the medical profession right. They cannot be insensible to the great service we can and do render to the State, but, in order to secure their respect and co-operation in legislative matters, we must not allow discordant elements to enter our ranks, and destroy the influence and prestige that should be the natural heritage of a profession whose life-work is a labor of mercy and whose greatest reward is a consciousness of labor well performed.

ACUTE INFLAMMATION OF THE MIDDLE EAR*

By J. H. JAMES, M. D.

MANKATO, MINNESOTA

Probably there are few more trying or painful affections with which the general practitioner of medicine has to deal, especially in children, than acute otitis media; and a short review and discussion of this subject may not be amiss on this occasion, for, upon an early diagnosis and proper management of such a case, may depend quick relief from intense suffering and the prevention of life-long disability and discomfort.

When we remember that total deafness from

the standpoint of social enjoyment, is more to be dreaded than blindness, and that there are in the neighborhood of one million of deaf people in the United States, and that 40 per cent of acquired deafness is preventable, it is obvious that we of the medical profession should be thoroughly alive to our responsibility and privilege in the matter of the conservation of the hearing of our patients and others. If we will remember also that it is not only the physical handicap to the individual that results from deaf-

*Read before the Blue Earth Valley Medical Society, May 17, 1917.

ness, but that the moral character is liable to become warped in consequence, we well may stop and ponder.

Seeming mistakes and apparent indifference to requests and commands by a child may be wrongfully attributed to carelessness, and this defect often becomes one of the least tolerated of all physical defects by both parents and teachers.

A child is often blamed for ignoring requests which he has not heard or has not properly understood because of his imperfect hearing, and, being thus blamed without, to him, apparent cause, he resents the injustice and becomes morose and revengeful in consequence. Deaf persons are almost invariably suspicious unless well versed in lip-reading, and they suspect those about them of talking about them, and this leads to unhappiness and distrust. In matters where their suspicions are active they are impervious to reason and become disobedient. At home, where it would be supposed that great allowance would be made, is usually the place where it is the least tolerated, and by the time that the parents have learned that it is not dullness, but deafness, that is the cause, they have gotten into the habit of regarding the child as stupid, inattentive, and insubordinate. Parents are more considerate of the blind child than of the deaf, and the blind do not suffer in the same manner.

The middle ear, as you all know, communicates with the throat via the Eustachian tube, which is lined with mucous membrane, the same as that lining the throat and nares, and this lining is continuous with the middle ear, attic, and antrum. The drum forms the outer wall of the middle ear, and is composed of three layers, the inner layer of this same mucous membrane, and the outer layer of epithelium, which is a continuation of the skin and lining of the outer canal. The middle layer is composed of fibrous tissue with both circular and radiating fibers except in the upper portion, which is called Shrapnell's membrane, which has no fibrous layer and is therefore thinner than the other portions of the drum.

The epithelial covering is very rich in blood-vessels and nerves. Acute otitis media, then, is an inflammation of the lining membrane of the middle ear, and is more often met with in children than grown persons and during the years before fifteen. It is during this period that children are so often the victims of nasal or naso-

pharyngeal catarrh, which often extends to the Eustachian tube and through it to the middle ear. The frequent exanthemata which come at this age favor acute inflammation of the throat and neighboring structures, which, by extension reaches the middle ear, and most cases of chronic otitis media, so often met with in later life, date their inception from such cause, and are followed by perforation, and more or less destruction of the drum membrane, and by adhesions and defective hearing. It is estimated that fully 25 per cent of adults have some impairment of hearing, and that fully 75 per cent of this deafness is preventable.

This being true, it is of the utmost importance that the inflammations of childhood occurring in the middle ear should be recognized early, and that parents should be informed and educated as to the disastrous effects of neglect, and that proper treatment should be early rendered so that, if possible, the condition may be prevented from becoming chronic.

How few of the cases have any attention after the discharge has ceased! There remains the ruptured membrane to heal or to form adhesions to the walls or the ossicles, as the case may be, and with no attention to the resulting deafness that may occur in consequence.

The duration of the discharge, within reasonable limits, is said not to have so much to do with diagnosis of chronicity in these cases as has the amount and character of the evacuation; therefore it is not always an easy matter to tell where the demarkation between acute and chronic begins. If the discharge is very profuse and more than would naturally be expected to be secreted from the lining membrane of the middle ear alone, we may feel sure that the attic and the antrum are also involved, and the case may be considered as chronic.

The treatment of pus in the middle ear need not be essentially different from that of pus in any other portion of the body. Drainage, and that of sufficient capacity, is the principal thing to be sought. Insufficient drainage in acute cases is probably the cause of most of the chronic cases we meet, and the disastrous results to hearing which follow. Among the laity the idea seems to prevail that a ruptured or incised drum membrane means deafness; but this is not the case, since a person can hear quite well without any ear drum, other things being favorable and the ossicular chain being intact. It is the destruction or interference with the function of

the ossicles, and the thickening and adhesions caused by the inflammation and suppuration to the more delicate structures of the ear, that cause deafness in these cases, and not the destruction of the drum membrane alone.

Too often fond parents and others think that a discharging ear, so long as it is not painful, will do no harm; and it becomes the duty of the family physician, so far as possible, to correct this fallacy and to inform parents that, where there is discharge, destruction is going on and damage is being done.

As to the etiology: Probably the majority of cases of middle-ear inflammation are due to the extension of infection from the pharynx or nasal cavity by way of the Eustachian tube, as I have before said. Faulty blowing of the nose may force infective germs into the Eustachian tube or middle ear, and cause inflammation. Sometimes the patient is aware of it at the time of the entrance, which is soon followed by a sharp pain in the ear after violent effort to clear the nostril. Examination of the ear in an hour or so thereafter will show an inflamed drum membrane, and the ear will be quite painful, and the hearing impaired. In such cases the infection is direct, the infective material about the mouth of the Eustachian tube having been forced into the middle ear, and this is probably the most frequent cause of middle-ear inflammations that occur in the adult. In children the glandular structures are more active; therefore they are more susceptible to inflammations, and extension is more apt to be by direct continuity, the germs gradually working their way along the Eustachian tube into the middle ear via the lymphatic route or even through the blood-stream. The symptoms are the same as in the adult, only small children are unable to describe them, and our attention is called to it only by evidence of distress and pain, and by the patient placing the hand to the ear.

In all exanthemata there is a proneness to middle-ear involvement, and the virulence of the attack varies with the type of the disease. In some epidemics the liability to middle-ear involvement is much greater than in others, depending on the character and virulence of the infection present.

The pathology of middle-ear inflammation is due to a specific micro-organism in the Eustachian tube or middle ear, or both, which sets up an inflammation of the mucous membrane lining these cavities. The result is a pour-

ing out of an exudate which quickly fills the middle ear, causing fever and pain. The exudate being unable to escape via the Eustachian tube because of closure of its channel by the swollen membrane quickly fills the middle-ear cavity, becomes quickly purulent, and by its rapid formation causes pain from pressure on the sensitive drum, owing, as I previously stated, to the ab-swollen and bulging, most likely at the posterior superior quadrant, the region of Shrapnell's membrane, which is the thinnest portion of the drum, owing as I previously stated to the absence of connective tissue in this portion.

Unless the pressure is relieved by an incision the membrane soon ruptures from the softening and pressure within and pus escapes. When this occurs the painful symptoms usually disappear and the patient feels better. Too often the family physician is not consulted until this stage is reached.

Treatment.—Few of us, I think, fully realize the importance of absolute rest in bed during the early stages of middle-ear inflammation. Absolute rest in bed may cut short or even abort the exudate in the middle ear. Laxatives and anodynes are indicated; and, if there is coryza present with obstruction in the nostrils and blocking of the Eustachian tube, a few drops of one to eight thousand adrenalin solution, dropped into the nostrils every hour, will give relief, and dry heat may be applied to the ear with advantage. If the drum is not bulging too much, gentle syringing with very warm water, rendered alkaline by a teaspoonful of baking soda to a pint, is good. A pint or two passed into the outer ear-canal from a fountain syringe held a few inches above the ear, will be found grateful, and the glass end of a medicine-dropper can be used as the end-piece or ear-piece so that a very fine stream can be had, and directed onto the drum. This will cause the congested vessels to contract and pain will be promptly relieved. A warm solution of cocaine and adrenalin dropped into the ear will often give temporary relief from the pain. Should you find a bulging drum, then all these measures will be found useless, unless a free incision in the drum is made. This should be made promptly as a clean cut will heal more quickly than the ragged edge of a perforation from an abscess, which often becomes a permanent opening after such destruction of tissue as is caused by the softening and rupture of the drum membrane.

To induce local anesthesia for paracentesis,

equal parts of cocaine, menthol, and carbolic acid, with a few drops of glycerine added, is usually sufficient to enable an incision in the drum to be made.

A small pledget of cotton is saturated with the solution, and gently inserted in the canal until it comes in contact with the inflamed drum and left in situ from five to ten minutes, when it can be removed and the drum will be noticed to have a blanched appearance and the puncture can then be made comparatively painlessly. Before inserting this the external ear should be made as sterile as possible by mopping the canal with alcohol. A free incision should be made from the posterior-superior quadrant downward and around the handle of the malleus in a crescent shape to the anterior inferior quadrant so as to avoid injury to the stapes and the oval window, after which gentle syringing should be done three or four times a day with sterile solution. Peroxide of hydrogen is often used as a cleansing agent, but it has little germicidal or antiseptic properties. If the discharge continues more than three or four days it is an indication that the drainage is insufficient and the opening should be enlarged, as free drainage is the key-note to success in every acute middle-ear discharge. As the discharge lessens the middle ear should be inflated every two or three days for two weeks, either with the Politzer method or the catheter, so as to prevent adhesions forming between the drum and the tympanic walls of the middle ear.

Where possible bacterial examination should be made of the discharge, as upon the character of the infection will depend somewhat the prognosis, for streptococcic and diplococcic bacteria are the ones that are most often the cause of mastoiditis. Prolonged continuance of the discharge containing these bacteria means early interference and mastoid operation to prevent septic meningitis or brain abscess.

In making the incision it will be well to remember that the membrane does not lie in a perpendicular plain, but that the upper border is much nearer the external meatus than the lower border, that it inclines inward from above down, and that the knife penetrating above and cutting straight down it will emerge from the membrane before reaching the floor, and the incision will not be as long as was intended. By

beginning the incision high up and above behind the handle of the malleus in making the puncture you are in no danger of hitting the stapes or oval window as you would if you began above and in front of the malleus. One might begin his incision low down and in front of the malleus, and carry it backward around the end of the handle and up, and thus avoid the oval window; but it is more convenient with most people to cut down rather than up, and this has been my procedure. However, by cutting upward as described one would avoid the liability of making the incision too short.

It is somewhat disconcerting to the inexperienced operator not to have pus and mucus appear immediately after an incision, but a little experience will teach him that on account of the thick and adhesive character of the secretions, they will usually require several hours to appear. The expulsion of the secretions can be hastened by instilling warm solution of bicarbonate of soda into the middle ear; the soda overcomes the adhesive properties of the mucus and facilitates its discharge.

Closure of the incision in non-suppurative cases occurs in from one to three days as a rule, but in suppurative cases it remains open for several days and sometimes indefinitely.

Dressings should consist of strips of narrow gauze placed loosely in the meatus, but touching the drumhead. Always cleanse the meatal canal thoroughly with 1 to 3,000 bichloride solution before introducing the gauze dressing. Any little abrasion of the walls of the canal may otherwise be a seat of infection from discharges and abscess of the wall might result. Georgeus, a French writer, remarks that "now, in more cases than ever before, acute otitis media is passing into a tenacious chronic phase." He ascribes this in most cases to lack of prompt and efficient treatment under war conditions. He says "it is beyond our power to modify bad general conditions in time to affect otitis media, or to attenuate the virulence of peculiar vicious germs after wounds of the ear, but much can be accomplished by early paracentesis, and supervision of efficiency in drainage and antiseptic dressings. By these measures we are able to control nearly all cases of otitis media. Any general debility, adenoids, forms of otitis and secondary infections are potent factors in chronicity."

AURICULAR FIBRILLATION*

BY W. G. RICHARDS, M. D.

BILLINGS, MONTANA

Known for many years by such names as *pulsus irregularis perpetuus*, *delirium cordis*, etc., this particular form of pulse irregularity hardly received the serious attention it deserved until it fell under the keen scrutiny of James Mackenzie. He at first attributed it to auricular paralysis, but later to a simultaneous contraction of auricles and ventricles in response to a stimulus arising in the auriculoventricular node, and he accordingly described it in the first two editions of his book under the name of nodal rhythm. Cushny and Edwards, however, noticing the resemblance of pulse-tracings to those obtained from the dog in experimentally produced auricular fibrillation, suggested this might also be the cause in man, and the correctness of this surmise was shown by Rothberger and Winterberg and Thomas Lewis by electrocardiographic methods.

To obtain a clear conception of the subject, however, let us refresh our memories with a brief review of the mechanism of the heart-beat and impulse-formation.

All modern cardiology is based on the acceptance of the so-called myogenic theory,—that the heart, "instead of being a passive instrument played upon by the nervous system," is, to a large extent, independent of nervous control, its contractions occurring in response to impulses originating in certain specialized neuromuscular tissue within it.

In a normal heart this seat of impulse initiation is the sino-auricular node, a collection of neuromuscular tissue situated at the junction of the superior vena cava and the right auricular appendix. From this point the impulse travels through the auricular tissue or along the septum, the exact path not having been determined, to the auriculoventricular node on the right side of the interauricular septum close to the anterior edge of the coronary sinus, immediately above the insertion of the median cusp of the tricuspid valve, and from here by the auriculoventricular bundle along the interauricular and interventricular septa to end in the muscle cells in the interior of the ventricles.¹

The property of impulse-initiation, however, is not confined to the sino-auricular node, but

is possessed by all this specialized tissue, each part having its own inherent rate of production, which decreases in frequency from above down; consequently, when for any reason the sino-auricular node is isolated from the rest of the system and the transmission of impulses interrupted, the tissue lower down becomes the pace-maker, and impresses its own particular rhythm upon those parts of the heart which beat in response to it. Thus in complete heart-block, when the ventricles are cut off from all communication with the sino-auricular node, these beat at the rate of about forty to the minute, instead of at the normal rate of about seventy, when they receive their stimulus from that node along the ordinary channels; and a large variety of cardiac irregularities may be established by disease or toxic influences affecting the various parts of this system of specialized tissue.

In the particular condition under consideration, the impulse fails to be transmitted in regular order from node to auricle, and auricle to ventricle, but is "muddled," as it were, in the auricle, so that, instead of the auricular muscles contracting in unison, producing a regular systole, followed by a sequential contraction and systole of the ventricles, each auricular muscle or bundle of muscles contracts independently, so that to the onlooker, though the auricles as a whole are in a state of diastole, the whole of the musculature is seen to be engaged in a series of fine worm-like movements.

Of the actual underlying pathological condition we are still ignorant. It has been suggested that it is caused by degenerative changes in the sino-auricular node, but these are not always found post mortem, and in cases where the node has been found damaged auricular activity has been normal during life. Lewis thinks it is caused by increased excitability of the auricular muscle, whereby ectopic stimuli are continually being produced in its different parts. Gaskell and others incline to the opinion that it is due to a condition of block between the muscle cells, so that impulse-transmission is interrupted, and an irregular flow to the ventricles is produced. In other words, utilizing Lewis' graphic description of the flow of the excitation-wave, that "it may be likened to the spread of a fluid poured upon a flat surface, its edge advancing as an

*Presented before the Yellowstone Valley Medical Association, Billings, Montana, April 4, 1917.

ever widening circle until the whole surface is covered," we may say that in auricular fibrillation the spread is as if the fluid were poured upon a surface like a poorly made piece of glass, which is broken by small elevations and depressions. In such a case the fluid will not present a regularly advancing edge, but an irregular one, leaving uncovered portions in the form of islands, jutting promontories, and other geographical figures. Eyster and Meek,³ however, have recently shown that normally the impulse is not conducted from the sino-auricular node to the auriculoventricular node by way of the auricle, but by a separate though not well-defined path. Consequently, I would suggest that possibly in auricular fibrillation this path is damaged, so that passage of the impulse is completely blocked along it. It accordingly attempts to pass by way of the auricle, but there meets with resistance, and is blocked at multitudinous points, though by traveling along circuitous routes through the auricular muscle fibers it succeeds in reaching the auriculoventricular node in sufficient numbers and intensity to prevent a transference of the function of pace-maker to this node.

As a result of the roundabout routes of travel impulses arrive at the auriculoventricular node at irregular times, and were each one to go through to the ventricles a condition of exhaustion would rapidly ensue, but after the passage of each impulse the neuromuscular tissue is in a "refractory" state until it has had time to recover. Consequently many impulses entirely fail of transmission, though nevertheless an irregular flow proceeds along the auriculoventricular bundle to the ventricle, and produces the irregularly occurring cardiac contractions which gave the condition the name of "perpetually irregular pulse."

The new rhythm may exist for some time before the patient's attention is directed to it, but, sooner or later, the handicap under which the heart is laboring produces the classical symptoms of cardiac incompetence, and the patient is forced to seek advice. He may or may not have noticed a fluttering or a palpitation, but his progressive weakness and limitation of effort are symptoms he cannot ignore. On feeling the pulse of such a one, one's attention will immediately be arrested by the irregularity. If first noticed by the nurse it will probably be put down on the chart as "intermittent," which term on a hospital chart usually covers all the varieties of known and

unknown irregularities. As one of its names implies, it is a *perpetually* irregular pulse. By no means can one elucidate any kind of sequence. A short pause will follow a long one, or a long a short one, or short or long ones will follow one another. If the pulse be rapid this will not be so apparent, but with a fall in rate will be easily perceived.

Besides being irregular the pulse waves are unequal. Tracings show varying heights of the summits. As in other forms of irregularity, there is a tendency for long pauses to be followed by high summits, and vice versa, but this is not invariable nor is there the same correspondence between heights and pauses one finds in interpolated extra systoles.

The irregularities may not be as noticeable in the radial pulse, for some of the heart-beats may not be of sufficient force to be transmitted to the wrist, and, if one relies upon the radial pulse, one will often be in error.

Polygraphic or electrocardiographic tracings will show characteristic alterations from the normal. In the jugular the "a" wave will be absent, while the "c" wave may be followed immediately by the "v" wave, or these two may be fused together. Sometimes a series of small waves will appear corresponding to the fibrillary contractions of the auricle. In the electrocardiogram the "P" wave will be absent, and a series of undulations corresponding to those in the jugular curve will appear.

When cardiac incompetence is marked the rate of the pulse will be rapid, but occasionally one will meet with cases where the pulse is quite slow, from a coincident complete disassociation of auricles and ventricles.

Murmurs may or may not be present. Where they have been present before the onset of fibrillation they may be altered in character with its inception. Their intensity may be altered from cycle to cycle because of the difference in force of the beats. A mitral diastolic may become intenser in sound and longer in duration until it fills up the whole of the diastole, probably from increased pressure of the blood in the auricle, which is never able to empty itself entirely. A systolic murmur may only be heard after the long pauses, for during the short diastoles very little blood can escape into the ventricle, and consequently there can be little regurgitation during systole. A presystolic murmur may entirely disappear, which is what one would expect with the cessation of auricular activity if this murmur

is caused by auricular systole. When the heart is beating rapidly it will probably be impossible to accurately identify the particular murmurs.

As with other heart affections the most frequent cause is rheumatism. The particular variety of streptococcus which is the causal agent of rheumatic fever seems to have an especial affinity for cardiac tissue, whether this be the myocardium or the valves. It is rather, however, in the chronic conditions or after repeated acute attacks than in the first that one meets with this form of irregularity, probably because a certain amount of degenerative change must be produced before a sufficient degree of block can be established. Next to rheumatism, it is most frequently found associated with arteriosclerotic conditions. It may occur during the course of, or as the result of, other acute infections, such as pneumonia, scarlet fever, diphtheria, or grip. Drugs and chemicals, such as potassium bromide and adrenalin, may cause it, while Robinson⁴ has reported a case apparently due to the fumes of hydrogen sulphide. Krumbaur⁵ reports cases following severe nervous disturbance. Digitalis may also cause it, which is an important point to be remembered.

When it occurs during the course of an acute infection or as the result of drugs it is most likely to be of a transient character, passing off with no apparent permanent effects. In the more chronic cases, once established, it is liable to persist during life, though even in the arteriosclerotic cases it may recover once or twice be-

fore the new rhythm is permanently established.

As to the treatment of auricular fibrillation: We know of nothing by which we can directly affect the rhythm, and restore it to normal. As in other branches of medicine, the science of therapeutics is but a laggard handmaiden of her sister sciences, and the treatment is still the treatment of cardiac failure. Fortunately, however, this is the condition which is par excellence the field for digitalis and its congeners, and usually response is most gratifying, and the patient is at least patched up for a time. In fact it is surprising how long a patient may live, and even carry on his business with this handicap.

Into the details of treatment I do not propose to enter, except to point out that the underlying principle is to administer enough digitalis so to reduce conductivity that many of the impulses will be blocked, and consequently the number of ventricular contractions reduced. With this accomplished the force of the heart-beats will be increased, and sufficient blood be delivered with each systole to supply the needs of the body. These patients, however, must be kept under observation for the rest of their lives, and digitalis at once resumed on the reappearance of symptoms of incompetency.

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THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

JULY 15, 1917

THE AVIATION APPLICANT

During the last two weeks a large number of candidates have been examined at the University for aviation training, and a rather unusually large number have passed the examination, while very few, comparatively, have been rejected. The principal object sought is evidently the maintenance of a man's equilibrium. If a man is able to stand a certain amount of twirling in a rotary chair, and his semicircular canals respond normally to an excessive number of turns in the chair, which is suddenly stopped by the operator, and then if he can maintain a certain amount of balance in his eye muscles, and has a reasonable physique, he becomes a candidate for the school of aviation. Not much consideration is given to his family history or to his growth, environment, and things of that sort, because what the aviator needs is balance, and it is assumed that, if he has balance, he has nerve. At all events, when he gets into the training-camp, and in any way shows that he suffers from fear, fright, or shock, and he is not able to stand the sudden curves, and turns, and swirls of the *aéroplane*, he is promptly dropped.

Young men are preferred; and those under twenty-five and even younger are sought because they are at the age when the "dare devil" in the boy is most conspicuous. He is the kind of man they want, even though his life in aviation time be limited to five hundred hours.

Of course, all phases of the termination of the war have been discussed by all sorts of people at all sorts of places and at all times, but the latest phase is that the war must be won in the air, hence the preparation for the aviator and the accumulation of a large number of candidates who can fly successfully.

Doubtless many disappointments will occur among the classes, for they are divided into classes; first, those who fly very high in small planes; second, those who fly in fighting machines and do battle; and, third, those who are the observers, photographers, and mapmakers. This adventure of sport promises to be a conspicuous feature in the war, and if the manufacturers can build machines fast enough it is quite likely that the government will train enough men to man them.

One of the interesting features of the aftermath of the war will be aviation. This and all other countries will probably witness increasing numbers of *aéroplanes* constantly in operation; and it is expected that after a time a man in a flying machine will be as safe as the man in an automobile. The editor prefers to remain on the ground.

THE TRAINING OF THE MIDDLE-AGED MAN

Walter Camp, of Yale, has a very sensible article in the *New York Times Magazine* for June twenty-fourth on the making of the middle-aged man fit to help in war. It is quite evident that the man who grows comfortable and approaches middle life relaxes his exercise. Some men, of course, keep up in a sort of perfunctory manner by ambling down town to their offices from their homes and back again, thinking that they have performed their duty toward themselves and are keeping themselves fit. This, of course, is pure bosh. It is no exercise at all, is taken in an uninteresting manner, does a man but little good except that he spends fifteen minutes in the open air, although he may talk business with a friend on all his way down to the office. Camp's idea is, that there are a great many men who could conserve their physical resources by

a little attention to some form of exercise that is real exercise.

Many training-camps have sprung up all over the country that are semimilitaristic, but the training received in them is an indiscriminating training. No attempt is made to classify the individuals in order to prevent one man from over-training and to keep the other from under-training. It is perfectly absurd to put an office man or a business man through two or three hours of hard drilling, for it undoes more than can be repaired in a long time. It may bring out some of the latent illnesses or physical defects that the man has, but further than that it is more harmful than beneficial.

Those who know anything about the setting-up exercises, which are very much in vogue at the present time, think they are child's-play, but, as a matter of fact, there are few men who can carry on twenty minutes or even fifteen minutes of the setting-up exercises. One who has gone through this method of training can very cheerfully affirm that it is hard work, and it will take the tuck out of most any man for a longer or shorter period, and to repeat it or to continue it over a very brief period is exceedingly unwise. For instance, in the Yale gymnasium fifteen minutes is allotted to calisthenic drill, followed by a walk of three-quarters of an hour, and this is done three times a week, which is quite enough exercise for a man of fifty. If this is continued three months, however, and the individual is watched by the trainer, the exercises are beneficial in every way. They make a man breathe better, and they free his stiffening muscles and stiffening joints, but, if during that period of training he is not taking reasonable care of his digestive apparatus, he falls by the wayside. One very good thing about this method of training is, that the trainer is the master of men; and it does any man good, particularly one who is accustomed to ordering others about, to be ordered about himself. It does him good in that it trains his mental faculties and his special senses. This training can be safely advised for men who have a moderate amount of arteriosclerosis and mild renal or cardiac difficulty; in fact, it does him a world of good.

Another form of exercise which the middle-aged man neglects is that of deep-breathing, and it is astounding how many men have forgotten how to breathe. Of course, it is well known that women as a class use but a fraction of their lung capacity, but there is no excuse for

a man not to know what deep-breathing means, and the good that it does. Of course, it is presumed that every man who goes into any training work is to be submitted to an examination beforehand, in order not to increase physical disorders or defects by physical training.

There are some men who ought not to be trained at all who should limit themselves to a mild form of exercise and devote themselves to rest and relaxation. Those men, fortunately, are comparatively few, but the busy man who overloads his stomach and takes little or no exercises, should almost be forced by law to commit himself to a ninety-day period during which he exercises not less than three times a week and for not less than an hour at a time.

POLIOMYELITIS

The discussion of infantile paralysis at the recent meeting of the American Medical Association brought about a fusillade of opinions at a joint meeting between the Sections on Nervous and Mental Diseases and Diseases of Children. Men of prominence discussed the various phases of the epidemic of last year, and, although there was much difference of opinion in regard to certain details, there seemed to be unanimity in the idea that drastic quarantine is unnecessary. Evidently, the Eastern states suffered from the rigidity of quarantine, and Dr. E. W. Taylor, of Boston, cited an instance in which a business man who had returned to his home in the late afternoon found one of his children had a sudden attack of poliomyelitis, and the authorities in Boston kept him from returning to his work for nearly two months on the ground that infantile paralysis is so infectious or contagious that it was safer to keep him home than to permit him to go down among his associates. Dr. Taylor also illustrated the inadvisability of such a quarantine by referring to a case, one case only, in a block where a policeman was stationed at each end of the block in order to prevent the spread of the disease. New York and Pennsylvania were also under a very drastic regulation, and there was a great deal of feeling that quarantine of such a kind was wholly useless. Dr. Wisenberg, of Philadelphia, and Dr. Fisher, of New York, each of whom had seen between 800 or 900 cases, came to the conclusion that infantile paralysis is not as dangerous as it has seemed to be, and that most of the cases came through carriers and

only a very few cases have developed through personal contact.

Mayor Mitchel of New York a year ago appointed a special committee which was financed by the Rockefeller Foundation to aid the Department of Health in combating the epidemic of infantile paralysis. Mayor Mitchel was chairman of this special committee; Dr. Simon Flexner, vice-chairman; and Dr. Haven Emerson, Health Commissioner of New York City, Dr. Walter B. James, and Dr. Glenworth R. Butler completed the membership; and Dr. Alvah H. Doty served as medical director of the committee's activities. The committee's conclusions were based on a study of 5,496 cases diagnosed by the Department of Health as poliomyelitis between July 17 and September 20, 1916, out of a total of 9,023 cases in Greater New York. The committee's conclusions are summarized as follows:

1. Infantile paralysis is communicated by personal contact.
2. Slight and non-paralytic cases are the most frequent sources of infection, as these cases arouse less suspicion and others come in contact with them.
3. The disease usually develops from three to ten days after exposure.
4. Previous good health does not give immunity from attack.

The points which the committee emphasized in their report and which they considered of the most practical importance to parents, are these:

1. Children who are ill should be kept away from others until it is definitely certain that the ill child has not a communicable disease.
2. If one's own child develops suspicious symptoms, the child should be kept away from others till it is known that it has not a communicable disease.

Early diagnosis of suspected cases and prompt isolation of the patient are held to be of the greatest importance to prevent the spread of the disease. In supplementary investigations the committee could find no substantial evidence to show that infection was spread from contaminated sources of milk supply or other foods, or that the disease is carried by lower animals or insects or by clothing and other extraneous objects. Very naturally, these conclusions aroused a great

deal of interest, and incidentally aroused a good deal of opposition from other investigators; and a commission headed by Dr. Charles E. Dana, of New York, took exceptions to the findings of the committee, and, although Dr. Dana is in accord with the general principles of the work of the committee, he did not agree as to the methods of communicability.

The speakers who took part in the joint session of the two Sections referred to discussed, not only the character of the infectious side, but also the best methods of treatment; and the discussion was participated in by pediatricists, orthopedists, and neurologists.

Evidently, this disease must be looked upon primarily as an epidemiological problem, and hence the work of prevention stands out pre-eminently. This means an investigation of conditions surrounding the patient and the investigation of carriers who, although not suffering from the disease, probably have the germs either in the throat or nose, and in this way may communicate it to others. After the epidemiological investigation the orthopedists and the neurologists should be associated in the treatment of this disorder.

Notwithstanding the temporary differences between the pediatricist, the orthopedist, and the neurologist, each has an important part to perform in the after-care of the persons afflicted. The neurologist is the man to decide as to the extent and the seriousness of the paralysis, and is the man who should determine the first order of treatment: first, because he is familiar with paralytic states and, next, because he is equipped, or should be equipped, with a knowledge of muscle-testing, and should determine how far massage and exercise should be carried. Not infrequently the exercise of the child is overdone, and the neurologist is the man to determine this problem. A number of cases were cited to show that children were not infrequently overexercised, and, rather than exercise, need rest. The orthopedist, however, is the man to determine the position of the paralyzed extremities and the necessary means for the preservation of muscle-tone and power, as well as for the ultimate position. To that end he is best able to suggest apparatus necessary, the movements, and the length of time that the apparatus should be worn, as well as the necessity of change in appliances in order to

give the best ultimate results. Fortunately, a large number of these patients are recoverable. Some of them recover within a few months, and some of them require from one to three years to make a clinical recovery even though they are not absolutely restored.

Minnesota now has a working unit composed of an orthopedist, experienced muscle-testers, and nurses to follow up individual cases throughout the state, and it is the duty and privilege of every physician to facilitate this work to the utmost. It is generally admitted that there is no medicinal agent that is of any value, but, if the disease can be recognized early, say, within the first few hours, it is possible to minimize the after-results; otherwise the patient is continuously in the hands of the orthopedist and neurologist.

THE PROPOSED CHANGE IN THE MAYO AFFILIATION PLAN

We spoke in these columns in our last issue of "A New Mayo Plan," clearly stating that our information was not official. The Drs. Mayo have since made known to the Board of Regents their proposed modification of the old plan, and it is now under consideration.

They offer the Board of Regents the privilege, after a term of twenty-five years, of cancelling that part of the present arrangement which confines the expenditure of the income of the endowment fund (this fund is expected soon to become two million dollars) to Rochester. If the Board of Regents take such action, the endowment fund, to be known as the "Mayo Foundation," could be spent by the Board for graduate and research work without restriction. This, of course, would practically annul the affiliation, leaving the endowment as a pure gift to the Medical School.

To effect this change three-year notice must be given after twenty-five years from date; and such action by the Regents requires a vote of five-sixths of the full membership of the Board.

NEWS ITEMS

Dr. F. L. Smith, of Eyota, is now at Rochester.

Dr. A. E. Amundson, of McIntosh, has moved to Oslo.

Dr. J. W. O'Neill has moved from Albertville to Foreston.

Dr. Moses L. Strathern, formerly of Eveleth, has moved to Gilbert.

Dr. E. A. Trowbridge has moved from Fairbault to Kansas City.

Dr. W. S. Chapman has moved from Alexander, N. D., to Mellette, S. D.

The births in Minneapolis for the month of June were more than twice the number of deaths.

Conscription of physicians to obtain enough medical officers for the European war is not at all improbable.

An exhibition car of the U. S. Public Health Service is to tour North Dakota for public health education.

The Winona County Medical Society met on July 3 at Winona. Papers were read by Drs. Rosenberry and Shaffer, of Winona.

A number of the members of the Medical Woman's Club of the Twin Cities have sent their applications for war service to Washington.

Dr. W. J. Mayo, of Rochester, has been called to Washington to assist in the organization and conduct of the medical service in the war.

Dr. C. S. Raadquist, a recent interne at the St. Paul City and County Hospital, has become an associate of Dr. G. S. Wattam, of Warren.

Dr. Iver S. Benson has opened a modern fire-proof concrete hospital at Willmar. At present there is accommodation for fifteen patients.

Miss Harriet B. Leach, former superintendent of nurses at St. Barnabas Hospital, has accepted a position at the Milwaukee Maternity Hospital.

Princeton conferred the degree of LL. D. upon Dr. Charles H. Mayo last month, thus paying a high tribute to both Dr. Mayo and the medical profession.

Dr. Frank C. Todd, of Minneapolis, is at the head of the examining board for this district to pass upon the qualifications of applicants to the U. S. aviation service.

The annual meeting of the Sioux Falls Valley Medical Association was held last month at Sioux Falls, S. D. The papers were of a high order, and the discussions were full and interesting.

Dr. Adolph Hirschfield has been appointed to serve four years on the Board of Charities and Correction, of Minneapolis, to succeed Dr. A. E. Benjamin, who was not a candidate for re-appointment.

Dr. Carlton Graves, of Aitken, was elected president of the Northwestern Minnesota and

Northwestern Wisconsin Guernsey Breeder's Association at their annual meeting held at Barnum last month.

Dr. R. G. Spurbeck, of Proctor, has moved to Cloquet to look after the practice of Dr. Franklin Raiter, who has joined the Medical Corps. Dr. W. H. Eaton, of Hanley Falls, has located in Proctor.

Dr. E. P. Quain, of Bismarck, N. D., was in the Twin Cities last week to purchase the surgical appliances for the Bismarck Unit of the Red Cross. The Unit is now ready for service, and may be called at any moment.

Twenty nurses recently graduated, with the usual exercises, from the Minneapolis Swedish Hospital. The commencement address was delivered by Dr. A. S. Hamilton, president of the Hennepin County Medical Society.

At their June examination the Minnesota State Board of Medical Examiners gave certificates to practice in the state to forty doctors, twenty-eight of whom were recent graduates of the Medical School of the University of Minnesota.

The Southern Minnesota Medical Association meets at Fairbault July 23 and 24. The program is made up largely of Chicago, Rochester and Twin City men, and the subjects to be presented and discussed are unusually practical and timely.

The Red River Valley Medical Association held a quarterly meeting at Thief River Falls last month. The attendance was good and several new members were received. Drs. A. E. Benjamin and H. L. Ulrich, of Minneapolis, read papers.

The Minneapolis City Health Department has begun publication of a monthly bulletin. The first number, a four-page folder, gives a history of the department, an explanation of duties of employes, and vital statistics and laboratory reports for May.

Dr. J. W. Chamberlin, 734 Lowry Building, Saint Paul, has been appointed Chairman of the Committee on Arrangements and Entertainment for the next meeting of the Minnesota State Medical Association, to be held in Saint Paul, October 10-12, 1917.

We desire to inform Twin City physicians and dentists that an unusual number of very competent young women have recently applied to us for office positions. Some of these applicants have had office experience and some are com-

petent stenographers. Some of them will accept places for a few hours daily work at moderate wages. We shall be glad to hear from any physician or dentist seeking such office help.

Dr. Jacob L. Berthold, of Perham, died at his home on July 6, from carcinoma of the colon, at the age of 57. Dr. Berthold was a graduate of the Medical Department of the University of Maryland, Class of '86, and had practiced in Perham over thirty years.

Dr. James F. Spelman, of Anaconda, Mont., died last month at the age of 49. Dr. Spelman was a Pennsylvania graduate, and was one of the leading surgeons of Montana. He located in Anaconda in 1891, and was a former president of the State Medical Association.

The Sioux Valley Eye and Ear Academy will hold its ninth semi-annual meeting in Omaha on July 16. This flourishing society is composed of Iowa, Nebraska, and South Dakota men, with Dr. L. N. Grosvenor, of Huron, S. D., its secretary-treasurer, and one of its leading boosters.

PHYSICIANS LICENSED AT THE JUNE (1917) EXAMINATIONS TO PRACTICE IN MINNESOTA UPON EXAMINATION

Anderson, Allen R.	U. of Minn., 1918
Beard, Archibald H.	Harvard, 1914
Doyle, John B.	Rush, 1917
Ebert, Michael H.	Rush, 1917
Freed, Oscar J. R.	U. of Minn., 1918
Geer, Everett K.	U. of Minn., 1918
Goss, Harold L.	U. of Minn., 1918
Groebner, Otto A.	U. of Minn., 1918
Holmes, Charles K.	U. of Minn., 1918
Hoyde, Rolf	U. of Minn., 1918
Kittelson, John A.	U. of Minn., 1918
Klima, William W.	U. of Minn., 1918
Knudson, Herbert M.	U. of Minn., 1918
Larson, Albert M.	U. of Minn., 1918
Lee, Henry M.	Rush, 1917
Lepak, John A.	U. of Minn., 1918
Lynch, George V.	U. of Minn., 1918
McFarland, Arthur H.	Columbia U., N. Y., 1915
Merkert, George L.	U. of Minn., 1918
Molander, Herbert A.	U. of Minn., 1918
Moriarty, Cecile R.	U. of Minn., 1918
Nordin, Gustaf T.	U. of Minn., 1918
Pearson, Fritz R.	U. of Minn., 1918
Proshek, Charles E.	U. of Minn., 1918
Radabaugh, Rudolph C.	
	Coll. of Med., U. of Ill., 1917

Reinhardt, Wm. Robt. U. of Minn., 1918
 Riegel, J. Arthur. U. of Minn., 1918
 Shapere, Abraham D. Rush, 1917
 Shapiro, Morse J. U. of Minn., 1918
 Smersh, Jerome F. U. of Minn., 1918
 Smith, Millard F. U. of Minn., 1918
 Stuhr, John W. U. of Minn., 1918
 Sund, Adolph G. U. of Minn., 1918
 Swanson, Edwin O. U. of Minn., 1918
 Vaughn, Florian. U. of Minn., 1918

BY RECIPROCITY

Cherry, Charles H. Med. Coll. of Va., 1911
 Libert, John N. Creighton, 1916
 Maxwell, Thomas M. Creighton, 1916
 Murphy, Leonard J. Northwestern, 1916
 Thysell, Frederick A. Jefferson, 1913

LOCUM TENENCY WANTED

I wish to take a position as locum tenens for the months of August and September. Address 530, care of this office.

MINNEAPOLIS PRACTICE OFFERED

I am leaving for war service soon, and will turn over my practice to a physician renting my offices in the P. & S. Bldg., Minneapolis. Address 528 care of this office.

POSITION IN MINNEAPOLIS OFFICE WANTED

A young woman with five years' experience in a physician's office, desires a new position. Competent stenographer and typewriter. Best of references. Address 522, care of this office.

LOCUM TENENCY WANTED

I desire to take a place as locum tenens, or to buy a practice in South Dakota. I desire a location immediately. Address Dennis Sullivan, M. D., 1022 Eighth Ave. S., Moorhead, Minn.

LOCUM TENENS WANTED

I want a physician with experience to take my practice in northeastern South Dakota when I leave for military duty. This is a heavy practice and will make a very liberal proposition to the right man. Address 526, care of this office.

ST. PAUL OFFICE FOR SALE

Desirable office located in center of business district at corner of Seventh and Robert streets. Have commission in U. S. Corps. Am subject to be called at any time. Address Dr. N. G. Mortenson, 403 Bremer Arcade, St. Paul.

LOCATION OFFERED

I will rent my ten-room residence office, partly furnished with operating-room and surgical equipment during the war, and arrange to make the work permanent. In Minnesota town of 600, with two railroads. Practice pays \$5,000; chance for surgery. Am commissioned in Medical Reserve Corps. Address 523, care of this office.

OFFICE POSITION WANTED

A young lady with no experience, but with a pleasing personality and the ability to take charge of an office containing a number of physicians, wishes a place in Minneapolis. Address 508, care of this office.

POSITION AS MATRON OR ASSISTANT MATRON IN A HOSPITAL WANTED

By a thoroughly competent woman who has had a number of years' experience in a large institution, and can give best of references. Speaks English, German, and French. Address 516, care of this office.

OFFICE POSITION WANTED

WANTED—By young woman, 26 years old, a position as office girl, country preferred. I have been with late Dr. Frank, of Anoka, seven years. Am qualified for general office work. Can drive a team or run a car. Address 529, care of this office.

PRACTICE OFFERED

I want a physician to take over my practice. I am in the Medical Reserve, and shall soon leave. Village of 800, sixty miles from Minneapolis. Can have practice by paying running expenses, and have option of remaining permanently. Address 524, care of this office.

POSITION OFFERED

I want a young man to take my practice while I am absent on military duty. Practice is in a fine Minnesota village and pays between \$4,000 and \$5,000 cash. Nothing to buy; only office expenses to pay. If I get the right man, I shall be glad to have him remain permanently. Address 527, care of this office.

PRACTICE FOR SALE

In village of 500, forty miles from Minneapolis, in the lake district of Central Minnesota. Practice pays between three and four thousand dollars a year. 95 per cent voluntary collections. Will sell at invoice of office equipment on easy terms. Elgin roadster, optional. Reason for selling, commission in Medical Reserve, subject to call. This notice will appear but once. Address 520, care of this office.

PRACTICE FOR SALE

In Southwestern Minnesota an unopposed \$4,500 to \$5,000 practice in an up-to-date town of 625 population, with a rich surrounding country. Nearest competition 12, 12 and 19 miles. Railroad, insurance and county appointments. No better unopposed practice anywhere. Price, \$8,000 for new, large, modern house, combining residence and office, specially built for doctor. Facilities for doing surgery. Terms to suit. German-Catholic preferred. Address 531, care of this office.

PRACTICE FOR SALE

A \$3,500 to \$4,000 practice in town of 400, in one of the richest communities of Southern Minnesota. Practice is unopposed; competition, N. W., 9 miles; S. W., 9 miles; N. E., 17 miles; S. E., 15 miles. Three towns without doctors within 6, 5, and 7 miles, respectively. Mostly Norwegians, with some Germans and Hollanders. Collection, 99+ per cent. Will sell office equipment and practice for \$400. Must be taken at once as I am going into the Army. Address 525, care of this office.

PUBLISHER'S DEPARTMENT

CHIPPEWA WATER

Bottled water for the table and general household use is a fixed "institution," and needs no justification. But it needs to be an excellent, indeed, a well-nigh perfect water, handled in a way that is almost as technical as the preparation for a major surgical operation. Care, care, and then care lest contamination result at some point of the process of handling is indispensable.

The Chippewa Spring water so long and favorably known in the Twin Cities and adjacent territory is, we think, the only water that meets all the requirements of a high-grade table water.

LAVORIS

When Lavoris was put upon the market a number of years ago by a Minneapolis corporation, its president said "no false claims need be made for Lavoris," and none have been made; and Lavoris has been a tremendous success.

Lavoris is a fixed zinc preparation that meets the every-day need of physicians who know the therapeutic value of zinc. It is never prescribed as a proprietary remedy, but just as an admirably compounded remedy containing the drugs the physician wants to prescribe, but which the pharmacist cannot put up in the elegant form in which they are found in Lavoris.

THE OTTAWA TUBERCULOSIS COLONY

When the organizers of the Ottawa Tuberculosis Colony sought a place for their work they had in mind the value of out-door life with an environment, as to surroundings and climate, that would make out-door life attractive. They found their ideals in this respect met on the river banks at Ottawa, Illinois. Here was founded an institution that has made a remarkable record of improvement and cure.

The Colony has attained a wide reputation, and this is in no small degree due to the management of Dr. Petit, who is known to the profession as a man of most excellent judgment as well as of high scientific attainments. The illustrated booklet of the Colony is full of interesting and valuable information, and will be sent free to physicians.

THE MEDICAL PROTECTIVE COMPANY

It is a noteworthy fact that whenever protective insurance for medical men is discussed only two modes of insurance are ever mentioned. These modes are (1) the insurance furnished by a state medical association and (2) the insurance furnished by the Medical Protective Company of Ft. Wayne, Ind.

But this is not all the story. The state association furnishes one kind of insurance, and the Ft. Wayne another kind, so that they are in no sense rivals. Unfortunately, the aims of the two are such that complete co-operation is not practicable; but perfect goodwill exists between them.

The state insurance is as cheap as dirt, and excellent; but it does not pay verdicts. The Protective Company's insurance is cheap enough for what it furnishes and the Company writes a well-nigh perfect policy and *never*

haggles when a suit is threatened or begun. It stands behind its guns and fights, and if beaten it pays.

THE CHAMBERLAIN SANITARIUM AND HOSPITAL

Chamberlain, S. D., is an attractive city and is located in a very rich farming community. It is capable of amply supporting a sanatorium and hospital of high grade. It has had for some years a building of 125-bed capacity, thoroughly equipped with a modern scientific outfit, and, on the whole, it has been well conducted; but it has failed to gain the full confidence of the medical profession because of practices not thoroughly ethical. We are glad to believe, yes to *know*, that this institution under its new management will be worthy, and will soon gain the whole confidence of the entire medical profession of South Dakota and thus become a credit to Chamberlain and to the State.

Its new manager, Dr. R. A. Crawford, has put himself squarely and manfully on record as opposed to any practice that is discreditable to medical men; and he brings to the institution both the capacity and the character to make it what all medical men would have it be,—a beneficent, helpful, and profitable sanatorium and hospital, serving the public in the largest degree possible while being profitable to its conductors.

We bespeak for Dr. Crawford due recognition for his resolves and his performances.

THE CONVENIENT ASPIROL

Aspirols afford ready means of medication by inhalation. They are convenient, practical, different, and their novelty appeals. The medicament in Aspirols is enclosed in thin glass containers wrapped in braided, silk-covered, absorbent cotton. Slight pressure fractures the glass, the wrapping absorbs the liquid, and it is ready for inhalation.

Aspirols are manufactured by Eli Lilly & Company, and the line includes Aspirols Ammonia, containing five minims of ammonia, useful in asphyxiation, fainting, and other emergencies; Aspirols Ammonia Aromatic, convenient to carry and serviceable in the office and sickroom; and Aspirol Amyl Nitrate, used in angina pectoris, asthma and some forms of migraine. The latter are supplied in two sizes containing three and five minims.

Iodine Tubes and Ampoules of Iodine, the former containing a few drops of tincture of iodine in a capillary glass tube, for sterilizing the site of hypodermatic injection, and the latter for purposes where more iodine is desired for painting, are both useful products that should be a part of every physician's armamentarium. These also are manufactured by Eli Lilly & Company, and supplied through the drug trade.

THE SOUTH SIDE SANITARIUM

As the editor of THE JOURNAL-LANCET conducts the above-named hospital for mild mental cases, it is but proper to say that he knows nothing of this notice of the institution, and will not see it before it is printed; therefore, he cannot be blamed if the notice fails to do justice to the subject.

Dr. Jones has necessarily been compelled for many years to have an institution of his own to care for certain cases that come to him as a specialist in nervous and mental diseases. His present sanatorium is located

in an excellent part of the city, occupying a remodelled "mansion" of one of our wealthy citizens.

While the building and location are all that can be desired, they alone do not make a complete sanatorium for mental cases. It is, after all, the chief and his staff. The chief—well, he is the same genial editor and neurologist who, by his work for and in the profession, for many years as professor of neurology in the Medical School of the University of Minnesota, and, also for many years, as editor of the official organ of three state medical associations, has impressed himself and his work upon the medical profession of the Northwest.

Dr. W. A. Jones holds a very high place in the medical profession; and the South Side Sanitarium, with a staff like unto its chief in the conscientious care of the mentally sick, is his hobby, and the work done by it is his pride.

CHLORAZENE AND DAKIN'S SOLUTION

How does Chlorazene compare with the hypochlorites or Dakin's Solution? You have heard a great deal about the Hypochlorites, commonly known as Dakin's Solution.

The difference between Chlorazene and Dakin's Solution may not be clear to you. It is just this: Chlorazene is a definite chemical compound (para-toluenesodium-sulphochloramide) which was developed by Dr. H. D. Dakin, of the Rockefeller Institute, subsequent to his work with the hypochlorites. This new synthetic is known as Chloramine T in Europe and Chlorazene in the United States. Chlorazene is an improvement upon the hypochlorites. Dr. Dakin has gone a step further and developed in Chlorazene an antiseptic which is not only as powerful as the hypochlorites and similar in action, but one which is less toxic, less irritant, and stable, both in powder and solution. Chlorazene is more convenient than Dakin's Solution and more generally efficient.

The hypochlorites, to be 100 per cent efficient, must be prepared exactly in accordance with the latest method (there have been three or four formulas) and fresh solutions must be made frequently. The process is involved and technical, requiring a trained chemist and considerable laboratory equipment, each batch must be tested and protected to prevent deterioration for the hypochlorites are sensitive to light and heat. Few physicians and only the larger hospitals have the facilities for preparing this hypochlorite solution.

On the other hand, Chlorazene is supplied in powder and tablet form available for use at any time. It will keep indefinitely. Irrigating solutions for use according to the Carrel-Dakin method may be prepared with Chlorazene promptly and economically.

Every physician and surgeon in the United States should know of and use Chlorazene wherever such an antiseptic is indicated. Literature will be sent on request to The Abbott Laboratories, Chicago, Illinois.

THE SALVARSAN SITUATION

Former Congressman H. A. Metz, of New York, made an interesting and important announcement recently to the effect that he has entered upon the manufacture in Brooklyn of salvarsan and neosalvarsan, following the Ehrlich processes; in other words, the "only and original 606," which hitherto has been made in Hoechst, will now be an American-made product.

Dr. G. P. Metz, a well-known chemist and the brother of the Congressman, went to Hoechst last year, and was thoroughly instructed in the intricacies of the manufacture of salvarsan and neosalvarsan, and the medical profession will, therefore, be reassured by the fact that, while the imitations of these absolutely necessary products have been made by persons who have had to guess at the methods of manufacture, the real salvarsan and neosalvarsan will be made by a highly specialized chemist who has actually made the product in the laboratory where it was made so long under the supervision of Professor Ehrlich.

It is Mr. Metz' intention to reduce the price as low as is consistent with proper means of manufacture. This will be made possible to a certain extent by the fact that there will be a saving of the duty of 30 per cent and a saving of the exorbitant war risks and freight charges, and, furthermore, the profit to the manufacturers abroad can be to a considerable degree eliminated.

When all importers were raising their prices to enormous heights, after the commencement of hostilities, Mr. Metz kept the price of salvarsan and neosalvarsan at the figures they had been before the war, and it was only after he was compelled to pay a higher price for his product and for bringing it into this country that he increased prices by a small amount. He steadfastly refused to take advantage of the situation. The profession as a whole appreciates the splendid stand Mr. Metz has taken.

The manufacture of well-known foreign products in the United States marks a new era in the medical and pharmaceutical life of the country, and we doubt not that after the conclusion of hostilities these products, which originated in Europe, will continue to be manufactured here.

Salvarsan has several imitations, the chief virtue of which is that they are cheaper. Physicians have been victimized by purchasing these things, which were alleged to work wonders in syphilis, only to find in many instances that the product, instead of being composed of arsenic was table salt or starch. No one has ever successfully counterfeited a dollar bill, nor has any one ever successfully imitated a standard product.

Physicians will more and more demand that the drugs, which they have used and which have given them results in the past, shall continue to be manufactured and the men who are looking for results will in the future, as in the past, keep on employing the original products. Imitations have no place in our therapy.—*Medical Times*.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, AUGUST 1, 1917

No. 15

UREMIA, ETIOLOGY, TYPES, AND DIAGNOSIS*

By L. G. ROWNTREE, M. D.

Professor of Medicine, University of Minnesota

Nature shields her secrets, yielding them grudgingly. The human mind is inquisitive but speculative. Theories are readily advanced, but disposed of with difficulty. Theories are important because theories control therapy. Utilizing method as a fulcrum, facts are occasionally pried from nature. New facts are usually anticipated or at least antedated by theories. New facts must needs be considered in relation to old theories. Uremia is not lacking in either facts or theories.

THEORIES RELATIVE TO THE CAUSE OF UREMIA

1. *Retention of Products of Normal Metabolism.*—Babington,¹ working with Bright eighty years ago, by crude methods determined that urea was present in the blood in abnormally large quantities. Bright believed urea toxic, and accepted it as the cause of the clinical syndrome which he was encountering in nephritis, and he called the condition *uremia*, or urea poisoning. Subsequent work showed urea to be relatively non-toxic, consequently it was abandoned as the cause of uremia.

The development of studies of renal function has recently revived interest in this old subject, since the fact has been established that the large majority of the cases of uremia are associated with marked increase in the blood urea. New light was thrown upon the subject by the work of Marshall and Davis,² which showed that urea was found in practically all the tissues of the body (bone, skin, and fat excluded) in the same con-

centration as exists in the blood, which indicates that the total urea content of the body is probably eight to ten times that of the blood.

Hewlett³ has made an important contribution within the current year. In order to determine the toxic effects of urea in man, 100 grams of urea were taken by mouth within a few hours. "When the concentration of urea in the blood exceeded 70 mgm. per 100 c.c. of blood the subject usually complained of headache, dizziness, drowsiness, mental apathy, inability to concentrate attention, muscular weakness and fatigue, and slight muscular tremor." Hewlett believes that in the asthenic type of uremia the above symptoms can be justly attributed to the high concentration of urea.

Dr. Grave and I have repeated this experiment with somewhat similar results. Chart 1 reveals the findings in one of these experiments indicating the level of blood urea nitrogen, the output of urine and of urea, Ambard's constant, and the duration and intensity of symptoms. The urea (100 grams) was taken between 10 A. M. and 11:30 A. M. Nausea was felt at 10:30, and regurgitation occurred between 11 and 11:30 A. M. Headache with a dazed sensation, chilliness, and inability to concentrate mentally appeared at 11:30 and persisted until 1 P. M. Headache was more severe in the upright posture. Between 10:45 A. M. and 1 P. M., four fluid stools were passed. Thirst and diuresis persisted throughout the day. The most marked symptoms were encountered while the urea N of the blood exceeded 30 mgm. per 100 c.c.

Chart 2 gives the typical results of similar ex-

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

periments on dogs. Urea was fed in large quantities for a period of eleven days. At the end of four days the dogs became subdued and quiet. The following day the blood urea nitrogen was found to be 36 mgm. per 100 c.c. The symptoms continued for five days and disappeared when the urea N fell below the level of 25 mgm. per 100 c.c. Diarrhea appeared in one animal. Nausea and vomiting were rather marked features.

These findings are borne out in clinical experience. Personally, I have repeatedly seen acute exacerbations of uremia manifestations follow

onset with the complete retention of water and simultaneously of all other constituents of urine. In the majority of cases of uremia a selective retention is possible, the time element and different thresholds of excretion for various urinary constituents playing a part.

As the cause of uremia other urinary constituents have come under suspicion from time to time. Ammonia, creatinine, uric acid, trimethylamine, and the salts of potassium have all been considered possibilities. Recently abundant proof

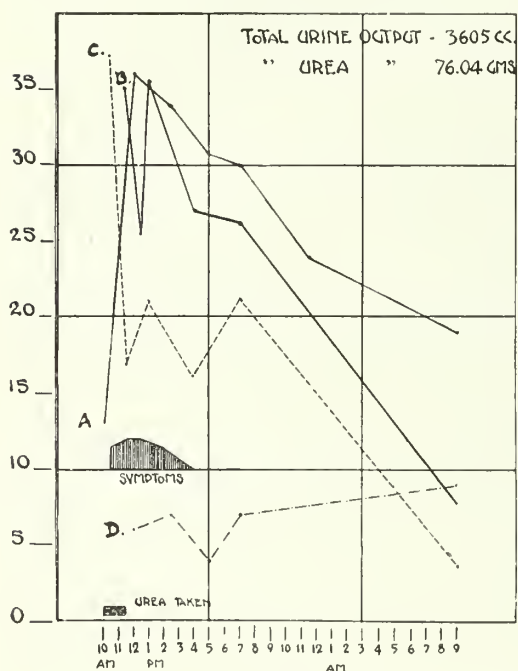


Fig. 1.

- A. Urea N of blood. Mgms. per 100 c.c.
B. Urine $\frac{\text{c.c. per hr.}}{10}$
C. Urea excreted ———
D. Urine ———

the administration of high protein diet in chronic nephritis, while, on the other hand, I have seen chronic uremia disappear on low protein diet.

Urinary Poisoning.—Clinical or experimental cases of anuria due to bilateral nephrectomy, tying off of ureter, impacted urinary calculi, or mercurial poisoning yield a pure type of anuria. Anorexia, progressive asthenia, and terminal stupor are, as a rule, the only symptoms observed under these conditions. Ascoli⁴ calls this condition "urinary poisoning." He differentiates it from uremia, and in this Foster⁵ concurs. In origin this differs from most instances of uremia from the point of view of its sudden and acute

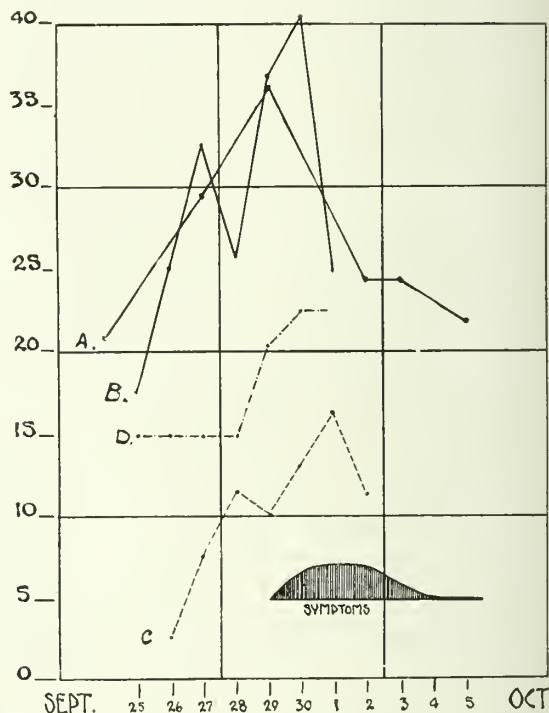


Fig. 2.

- A. Urea N of blood. Mgms. per 100 c.c.
B. Urine $\frac{\text{c.c.}}{10}$
C. Urea excreted, 3 gms. per hr. $\frac{\text{Gms.}}{4}$
D. Ambard's Constant. $\frac{\text{Gms.}}{4}$

has been established as to the simultaneous accumulation of urea, creatinine, and uric acid. The proof of causal relationship is still lacking. Dr. Grave and I are at present attempting experimentally to secure and maintain in the blood a level in these substances corresponding to that found clinically in uremia.

Hartman⁶ has recently isolated from the urine a substance which he calls *urinod*, a bright yellow oil which gives the reactions of a cyclic ketone, to which he has ascribed the empirical formula

S_6H_8O . Urinod has the odor of urine. Normally it is conjugated in the urine. In its free state it is extremely toxic. Hartman, on injecting himself with a small quantity of this substance, developed intense nausea, extreme headache, loss of appetite, restlessness, insomnia, and increased frequency of urination. If this can be confirmed it will have an important bearing on the subject of uremia.

2. *Products of Abnormal Metabolism.*—The possibilities of an abnormal metabolism, or of the accumulation of products of an abnormal catabolism, must also be considered. That tissue breakdown does occur in uremia at times is proved beyond question. This, as a rule, appears shortly ante-mortem and may be observed in conditions other than diseases of the kidney.

Foster holds abnormal metabolism responsible

cerebral edema probably played an etiologic part in cases of uremia developing in so-called parenchymatous nephritis in which condition renal function approximates normal except in relation to the excretion of salt and water.

4. *Acidosis.*—Acidosis has been held responsible. Von Jaksch⁷ suggested this as long ago as 1888. Straub & Schlayer⁸ and Fischer⁹ particularly have recently championed this idea.

Interested in both acidosis and uremia, I have studied many cases and attempted to see a causal relationship. Taking as criteria of acidosis a diminished alkaline reserve of the blood, a decreased carbon dioxide tension of alveolar air, and an increase in hydrogen-ion concentration of the blood, it must be admitted that acidosis does occur in many cases of uremia. On the other hand, death from uremia may occur without any sug-

Date	Alv. CO ₂ mm. Hg.	pH Blood	CO ₂ cap. of plasma, c.c. of CO ₂	Urea N mgm	T. n-p. N per 100 c.c. bl.	Creat- inine	Phthal- ein & Amard's	Remarks
4-17	29.72	7.2	.....	97	171	...	Phth. 7%	NaHCO ₃ 15 gms. daily
4-19	26.15	7.3	30.4	181	206	24	Trace Am. C. 1.02	600 c.c. 4% NaHCO ₃ I. V.
4-20	25.67	7.5	37.57	158	203	19	..... 1.09	
Before 4-22	.....	.....	24.59	91	171	.....	.....	600 c.c. 4% NaHCO ₃ I. V.
After	.....	7.6	26.45					
4-24	30.4	7.45	.....	87	162	.....	..... 0.41	
Before 4-25		7.3	31.7	84.5	.....	.....	.....	Transfusion
After	39.4	7.45	31.94	67	.....	.....	.....

for at least one form of uremia. He has isolated a highly toxic crystalline substance from the blood in a series of cases of convulsive uremia. The symptoms following the injection of animals with this substance are fecal discharges, convulsions, muscular twitchings, and coma. The substance is isolated by a purely empirical method, its constitution and nature being entirely unknown.

3. *Edema of the Brain, Local or General.*—This theory is an old one introduced by Rees and championed by Traube. Of late years it is gaining many new adherents. Fischer considers it the underlying cause in most cases of uremia. Widai and Straus are inclined to hold it responsible for at least the eclamptic type. Foster has reported three cases of uremia with practically normal renal function which, at autopsy, exhibited edema of the brain in addition to renal changes. For some years past I have felt that

gestion of acidosis. As a result of personal studies, I am thoroughly convinced that the acidosis is not responsible for the uremia. Table 1 presents the results of one of these studies. The acidosis can be corrected without the disappearance of uremia, and death from uremia may still occur. Except in acute uremia I have yet to see anything but temporary relief from the correction of the acidosis.

5. *Internal Secretion of the Kidney—Nephrolsins.*—Inasmuch as the existence of an internal secretion in the kidney has not been proven, and since we know practically nothing positive in nature concerning nephrolsins, theories concerning them will not be discussed.

It is interesting that we are returning to the views of Bright. We may be nearer the truth as to the cause of uremia than were he and his co-workers. We have more theories; certainly we are no more definite.

DIAGNOSIS OF UREMIA

"Uremia" is a term used to designate a symptom-complex, the manifestations of a toxemia resulting from renal insufficiency from any cause. Accepting this as the definition of uremia, the diagnosis becomes extremely simple. In the presence of this symptom-complex it is only necessary to establish renal insufficiency. The clinical manifestations of uremia are too familiar to warrant discussion before this Association.

Renal insufficiency is characterized by definite functional changes which are easily ascertained. The phenolsulphonephthalein excretion¹⁰ is markedly reduced,—usually to a trace; often to zero; the total non-protein nitrogen¹¹ of the blood is increased, usually to more than 50 mgms. per 100 c.c. of blood, the urea nitrogen¹² being chiefly responsible, constituting from 75 per cent to 85 per cent of the total non-protein nitrogen; the uric acid and creatinine content are simultaneously augmented¹³; the freezing-point of the serum is depressed below 0.60. Ambard's constant,¹⁴ which indicates the ability of the kidney to excrete compared with that of a normal kidney with the same level of urea in the blood, is also increased.

In establishing renal insufficiency it is not necessary to apply all these tests. The phthalein output, together with the urea content of the blood, usually yields all the information necessary for practical purposes.

Since the symptom-complex, namely, clinical uremia, is sometimes encountered in diseases of the kidney, while functionally evidence of marked renal insufficiency is wanting, it becomes necessary to face the question as to what we must diagnose such conditions.

TYPES OF UREMIA

The differentiation of types is not exactly easy since many factors must be considered. Many bases of classification can be entertained, among which the following may be considered:

1. *On the Basis of Symptoms.*—Emil Riess¹⁵ has recently divided uremia into the following types:

- | | |
|--------------|----------------|
| 1. Asthenic. | 3. Convulsive. |
| 2. Psychic. | 4. Mixed. |

He states that markedly increased urea content and increased molecular concentration of the blood characterize Groups 1 and 4, but that these phenomena are usually lacking in the psychic and convulsive form. Foster, on the other hand, believes that the cases of the convulsive type "all show periods of clear-cut nitrogen retention." In

addition they show an increase in the undetermined nitrogen. It is from this group that he has isolated the crystalline compound already referred to. My experience coincides largely with that of Foster, but I have seen at least one case with convulsions which was considered by excellent observers as an eclamptic type of uremia in which there was no retention of nitrogen and in which renal function was practically normal. Inasmuch as arteriosclerosis existed cerebral arteriosclerosis could not be excluded. At autopsy this was found to be the basis for the convulsions. Unquestionably, many such cases have been considered uremia, and perhaps they account to some extent for confusion in the literature in regard to the convulsive type.

2. *On an Etiologic Basis.*—Foster¹⁶ has differentiated the following types:

- Retention, urinary poisoning of Ascoli.
- Cerebral edema type.
- Toxic type, or epileptiform uremia.

I find it difficult to accept this clinical differentiation between types 1 and 3, as I am convinced that convulsions occur in the ordinary retention type. The basis of classification is not constant since symptoms are brought into consideration in the last type.

3. *On the Basis of Renal Functional Studies.*—Personally, I would differentiate uremia into two types from the functional viewpoint.

1. Uremia associated with renal insufficiency, due in all probability to the accumulation of products of normal and abnormal metabolism.

2. Uremia without renal insufficiency, in which group we have cases with disturbance of salt and water metabolism, the uremia being due to cerebral edema. This is a rare type of uremia. Certain other cases in which vascular changes are marked are frequently brought forward as uremia. Cerebral vascular changes are often responsible.

It is possible that in time we will only recognize the first group as true uremia and that physicochemical studies will demonstrate that cerebral edema is dependent largely upon extrarenal factors.

4. *According to the Course of the Disease.*—
A. Latent uremia. This is renal insufficiency in which the clinical manifestations have not yet made their appearance. The importance of its recognition is obvious. It can be exemplified by the following case:

L. G., aged 12, admitted March 27, 1911, as an interesting case of diabetes insipidus. The past history contained nothing of importance except the passing of

large quantities of urine and marked thirst. He was well nourished, not anemic, apparently a normal-looking boy. His blood-pressure ranged around 100 mm. of Hg. Some slight thickening of the radial arteries was noted; no definite eye changes. The urine on admission was large in amount, from 2,000 to 2,500 c.c., clear, specific gravity 1005-1010. No albumin, no casts. At this time no suspicion of nephritis was entertained, although a trace of albumin had been noted once previous to admission. The phthalein test, performed March 28, showed an output of only 7 per cent for two hours. Three days later only 3 per cent was excreted. With the exception of the phthalein findings absolutely no evidences of nephritis were present at this date. A week later he developed headaches, and a trace of albumin in the urine appeared. He rapidly became uremic, and died April 9, 1911.

Autopsy: A most intense grade of chronic interstitial nephritis was present, with almost complete disappearance of the cortex. A slight grade of acute nephritis was superimposed.

B. Acute uremia.

L. J. Johnson, colored girl, aged 12, admitted June 28, 1915. Chronic tonsillitis and chronic nephritis. Phthalein output 34%. Patient comes back in the fall in uremic convulsions, phthalein output of 12%, alveolar CO₂ 23.4 mm. Hg., pH. 7.3. Patient bled 350 c.c., given bromide and chloral for control of convulsions, sweated by hot packs and given a large quantity of alkali. In 48 hours the phthalein returned to 24 per cent, urea nitrogen to 16 mgm. and patient showed Ambard's constant of .33, the condition of renal function being much that seen on previous admission. All manifestations of uremia and acidosis disappeared under treatment. The acute exacerbation of the nephritis subsided but the chronic nephritis persisted.

C. Uremia with progressive renal insufficiency, as exemplified by the following case:

Collins, a young negro, aged 20, admitted to the hospital for chronic nephritis. On admission the renal function was fair. Functional studies were made at weekly intervals. Each examination revealed a slightly greater reduction of renal sufficiency. The patient showed a step-ladder descent into absence of renal function, and died a typical death in uremia. The proximity of uremia was known to us long before any clinical manifestations appeared.

D. Chronic stationary uremia.

A man was re-admitted about one year after his discharge from the hospital with a zero phthalein output. Nausea and vomiting were present from time to time throughout this entire year. The patient died on second admission with an exacerbation of his chronic uremia.

5. *According to the Predominance of Functional or Organic Changes.*—It is extremely important to recognize whether the case is one in which the uremia is due to organic or functional changes. The development of uremia in a case of marked chronic interstitial nephritis offers little in a permanent way as a result of treatment, whereas in an identical clinical picture encountered in back-pressure kidney, such as seen in cases of enlarged prostate, the prognosis may be

good. This is familiar to the surgeon, but not, as a rule, to the internist. I have known of several instances where the internist and surgeon have differed as to prognosis. Following the use of the constant catheter, forcing of fluids, and limitation of nitrogen intake, uremia has disappeared; and in some instances, following a subsequent prostatectomy, renal function has returned practically to normal.

These factors bear directly on the treatment of uremia since it is evident that the treatment is dependent upon our acceptance of one or the other of these underlying causes. In the vast majority of cases the treatment adopted is based on the theory of retention of products of metabolism. Indeed, I feel that it is wise to pursue this line of treatment in every case of uremia. When edema of the brain is present the question of mechanical relief of cerebral pressure may need to be considered. Lumbar puncture may be of the greatest value in cases with marked headache dependent upon cerebrovascular changes. If acidosis coexists alkali should be administered but only to the point of correcting the acidosis, not indiscriminately in all cases of uremia nor in the large amounts recently advocated. In every case of uremia it is our duty to determine if possible the underlying cause and to treat the case accordingly.

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CERTAIN METHODS USED IN THE LABORATORY INVESTIGATION OF ACIDOSIS AND RENAL FUNCTION*

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The numerous applications for information on the technic of these laboratory methods, which have come to us from various parts of the state, lead us to believe that descriptions of those which do not necessitate expensive apparatus or involve complicated manipulations and can be utilized in every-day practice, will be of general interest to the Association.

Descriptions of these methods may be found scattered through the literature, mainly in publications which deal particularly with experimental medicine and chemistry; but search requires much time, and in many instances the statements are not as clear as could be wished, and so many methods are given as to make the subject confusing. Moreover, few of us have complete files of such publications at our disposal.

It is our purpose to give those in which are combined, in so far as possible, value, simplicity, and inexpensiveness. It seems pertinent to place ourselves on record as saying that we do not regard these laboratory methods as worthy to replace a detailed history and painstaking physical examination in any case. It is generally accepted that one is seldom justified in making a diagnosis on the evidence afforded by any one symptom, or, we would add, any single laboratory determination unsupported by clinical evidence.

Acidosis.—It can hardly be too often emphasized that an actual acid condition of the whole blood-content of the body is incompatible with life even for a brief period, and that what we mean by the term "acidosis" is a diminution in the normal alkalescence.

The maintenance of the normal equilibrium is effected by the neutralization of the acid products of metabolism which escape oxidation, by bases in the foods, by elimination (particularly of acid urine and sweat), and by the arrest of protein as ammonia in process of conversion into urea. When these agencies become severely taxed the reserve supply of fixed bases of the tissues is drawn on. We have many evidences that the economy depletes this reserve of bases only in time of dire need. Among these evidences is the fact that when the necessity has arisen and the

draught been made, immediate advantage is taken of the earliest opportunity to replace the deficit from fixed bases introduced into the system.

On these considerations is based one of the simplest and most generally useful of the methods of determining an actual or impending reduction in the alkalescence of the blood.

This is known as the "alkaline tolerance test," and as elaborated by Sellards¹ is carried out as follows: The patient voids, reaction is found to be acid to litmus, and he is promptly given 5 gm. of sodium bicarbonate dissolved in water. At the end of three hours the urine is collected, and the reaction to litmus tested. In most apparently normal individuals the reaction is found to have been changed to alkaline or, at least, to be decidedly less acid. In case the change to alkalinity has not taken place, a second similar dose is given, and the urine tested at the end of a second three-hour period. In case it is found to be unchanged, thoroughly boil a portion of each specimen and again test the reaction as some alkali may be present as carbonate, which does not change litmus so readily as bicarbonate. If the administration of 10 gms. has not served to bring about an alkaline reaction we may assume that at least a potential acidosis exists provided pronounced reduction in kidney permeability can be eliminated. In some cases large doses, 20 to 30 gms., may be given at three-hour intervals. As much as 150 gms. in two days' time has failed to affect the reaction.

When, because of vomiting or for other reasons, administration by mouth will prove unsatisfactory, a 2 to 4 per cent solution may be safely injected into the vein.

Somewhat more complicated, but still relatively simple, is the dialysate method of Levy, Rowntree, and Marriott² for directly determining the hydrogen-ion concentration of the blood. The apparatus required is neither expensive nor complicated.

Briefly stated, the steps are as follows: Draw blood from the vein into a glass tube containing 5 drops of 20 per cent potassium oxalate (to prevent clotting), and mix thoroughly. Transfer 3 c.c. of blood to a small collodion sac which has been washed inside and out with physiologic

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

salt solution and lower into a small glass tube containing physiological salt solution. After six or seven minutes the collodion sac with its remaining contents is removed, and 5 drops of 0.01 per cent phenolsulphonephthalein is added to the contents of the glass tube, mixed by inverting, and compared colorimetrically with a series of tubes containing mixtures of different percentages of acid potassium phosphate and alkaline sodium phosphate with phenolsulphonephthalein as an indicator. The colors are fairly permanent if not constantly exposed to light. This method gives information directly of the actual reduction in alkalescence of the circulating blood.

Very similar in principle is the recently published method of Marriott³ for determining the CO₂ tension of alveolar air, the steps of which are the collection of the specimen of alveolar air in a rubber bag, blowing air from the bag for one minute through a weak sodium bicarbonate solution of known strength containing phenolsulphonephthalein as an indicator, by means of a glass tube drawn out to a fine point. At the end of this time the solution is saturated and no further color change takes place. The tube is stoppered and compared with a series of tubes containing mixtures in different proportions of acid potassium phosphate and alkaline sodium phosphate with phenolsulphonephthalein as an indicator. Results by this method check well with those gotten by determinations made with the Haldane apparatus, which are far more complicated.

As the CO₂ in the alveolar air may be assumed to be in equilibrium with that of plasma, except in definite pathological lung conditions, the determination of the plasma's CO₂ containing power or alkaline reserve is of value. This may be done by either the Van Slyke or the Marriott method.

A. The Van Slyke Method.—Draw the blood under paraffin oil into a centrifuge tube containing oxalate, centrifuge to precipitated cells, transfer plasma to separatory funnel, and saturate with CO₂ from the breath, blowing through a bottle containing glass beads to intercept the moisture. Begin the determination with the instrument completely filled with mercury to a point above the upper stop-cock in each capillary tube. Wash the cup with dilute ammonia, follow by water, and dry with filter paper. Add 1 c.c. saturated plasma from the separatory funnel, and allow it to flow into upper stem. The cup is washed with 1 c.c. water, and it is allowed to run into the up-

per stem. One drop of caprylic alcohol (to prevent foaming) is admitted to the capillary tube, and about 1 c.c. of 5 per cent sulphuric acid placed in the cup. Enough of this acid content of the cup carrying caprylic alcohol with it is now admitted to make the total volume 2.5 c.c. A drop of mercury is placed in the cup and allowed to flow to the upper cock to seal the same to hold absolute vacuum. Great care is taken that no air be allowed to enter at any step of the operation. The bulb containing mercury is lowered until the mercury stands at the 50 c.c. mark. Bubbles of CO₂ will be seen escaping into the vacuum. The apparatus is unclamped, and turned upside down and back several times, after which it is replaced in the clamp, the levelling bulb remaining at low level and watery solution allowed to flow completely into the small bulb below lower stop-cock without removing any gas. The mercury bulb is raised and the lower stop cock turned so that the mercury is admitted through the left entrance of the 3-way cock without readmitting the watery solution. The bulb is held beside the instrument so that the mercury in the stem is on a level with that in the bulb. This gas in the stem is subjected to atmospheric pressure, which makes necessary final correction for variation in this factor. The small quantity of watery solution on the surface of mercury in the stem may be disregarded, the volume of gas above this being read off directly. The conversion of the result into volume percentage of CO₂ bound by plasma is complicated, which has led to construction of a table of computations, a copy of which accompanies each instrument.

*B. The Marriott Method.*⁴—Collect the blood under paraffin oil, using oxalate if plasma is desired, but none if serum is to be used. Centrifuge and pipette 0.5 c.c. serum into a collodion sac which has been washed inside and out with 0.8 per cent salt solution; lower the sac into a small glass tube containing salt solution to which has been added phenolsulphonephthalein. After seven minutes remove the sac and transfer the dialysate to a clean test-tube 100 to 150 mm. in length and of the same diameter as the tubes containing the standard. Atmospheric air is passed through the solution by means of a glass tube drawn to a fine point connected with a bulb or bag, to remove the CO₂, the blowing being as rapid as possible without losing any of the contents. Three minutes is sufficient time. The color is now compared with the standard colors in the tubes.

Renal Function Tests.—The test which is above all others at once valuable, simple and inexpensive is the phenolsulphonaphthalein as presented in 1910 by Rowntree and Geraghty. It consists in having the patient void, giving water, injecting intramuscularly 1 c.c. of phenolsulphonaphthalein solution (containing 0.6 mg.), collecting the urine at the end of the first and second hours, making each specimen alkaline with NaOH, making up to a liter with water, and reading off percentages by colorimetric comparison with a standard made up in the same way using 1 c.c., p. s. p., solution, using either a colorimeter or ordinary test-tubes containing different percentage dilutions of the standard.

The determination of the urea concentration of the blood is of great value. Following is a modification of Marshall's urease method (5, 6, and 7): 2 c.c. of the oxalated blood, an equal quantity of water, and a tablet of urease are placed in a long, thin test-tube of such diameter as to fit easily into a 100 c.c. cylinder and kept at 50° to 60° C. for thirty to sixty minutes. The urea is converted into ammonium carbonate. Then a few drops of caprylic alcohol (to prevent foaming) and 5 c.c. of saturated solution of sodium or potassium carbonate (to liberate ammonia) are added, and ammonia drawn over into an acid solution of known strength by suction. The final determination may be made by either titration of the excess of acid or colorimetric reading by the use of Nessler's solution.

Brief allusion should be made to determination

of salt elimination which has been especially studied by Mosenthal.⁸ By administering a diet containing a known amount of sodium chloride over a twenty-four-hour period, collecting the day and night urine separately, estimating the total chloride elimination (by the Volhard method), and comparing rates of elimination and specific gravity for day and night hours, one may obtain valuable information of abnormal kidney function in the absence of demonstrable evidences of nephritis.

Finally, a fixed concentration of urine as shown by only slight variations in the specific gravity following promptly on marked changes in the quantity of water ingested, and by slight difference in the quantity of day and night urines, is suggestive of impairment of kidney function.

It is hoped that this demonstration will serve to induce some who may have regarded these methods as either too complicated or of too limited application to justify the necessary investment of time and money, to investigate them further and make use of them in their daily practice.

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FOR DISCUSSION SEE PAGE 502

THE PRESENT STATUS OF ACUTE INFECTIONS OF THE KIDNEY*

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and

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Infective agents may reach the kidney by various routes:

First, by a direct open wound of the organ or by direct extension of suppurative processes taking place in its neighborhood, as from spinal caries, retroperitoneal perforation of a duodenal ulcer, etc. This mode of infection is, however, quite rare.

A second mode of infection is brought about

by the ascent of organisms from an infected bladder through the column of urine in the ureter. This may take place when the closing mechanism of the ureteral orifice is interfered with by urinary retention, by tenesmus, by disease in the region of the termination of the ureter in the bladder and possibly by paralysis due to spinal disease. This method of infection was formerly supposed to be by far the most common, but at present the tendency is to attribute the majority of infections to other processes.

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

Direct extension of inflammation along the mucous membrane of the ureter from the bladder to the kidney may occur, but must be very rare.

An entirely new view of the mode of ascent results from the work of Hess, who concluded from the results of extensive clinical and experimental observation that the common path from the bladder to the kidney was by way of the lymphatics of the ureteral wall. He claims to have demonstrated a direct connection between the lymphatics of the bladder-wall and those of the kidney by this path, and that the lymph-current flows from the bladder to the kidney.

Another route of lymphatic infection has been described by Franke. He showed that the lymphatics of the large bowel pass to the lumbar glands via the capsule of the kidney. If this is true it would explain the frequent occurrence of colon infections, especially in infants and children.

The last route of kidney infection is by way of the blood stream, and this method of infection has recently come to be considered by far the most common.

The toxic nephritides which occur as the result of various infective processes do not at present concern us and processes due to the tubercle bacillus we will not consider here. In acute endocarditis and general sepsis frequently the kidneys show metastatic foci but these are of little practical interest.

The acute surgical infections of the kidney, usually unilateral, are secondary and ordinarily due to acute foci in other parts of the body, although the primary focus frequently is not to be discovered. The chronic focal infections, which have received so much attention of late are most likely to produce chronic toxic lesions.

Among the local infections which have been found responsible for kidney infections may be mentioned furuncles, carbuncles and paronychia. We have seen one case in which infection about the teeth was pretty certainly the cause and two following infections of the tonsils. Osteomyelitis has been a frequent cause as well as various superficial and apparently insignificant local infections.

The healthy kidney is fully competent to excrete infective organisms when not too virulent or numerous, without damage to itself. In addition to the organism some other local factor must ordinarily be present, which lowers the resistance of the kidney, usually of one side.

The predisposing factor can be determined in

a considerable proportion of cases. The experiments of Brewer are especially instructive in this regard. He showed that traumatic lesions of the kidney, as crushing or contusing, as well as passive congestion or anemia, which may be due to displacement or pelvic distension, will cause bacteria to lodge in the organ and produce lesions, when with normal kidney conditions they would pass through without damage. Stasis of urine on one side is a frequent factor, so stone in the pelvis or ureter is frequently found, as is obstruction of the ureter from stricture or compression, for example, from a pregnant uterus or from a tumor.

Nephroptosis may lower the resistance of the kidney by producing urinary stasis or circulatory disturbances. In some cases of ptosis the passive congestion is sufficient to cause severe hemorrhage, and this in itself would favor the localization of infection.

In one of our cases of ptosis with typical Dietl's crisis and eventually severe hemorrhage, both the attacks of pain and the bleeding were arrested by fixation. In two cases a severe hemorrhage from the right kidney was shortly followed by an acute inflammation of that kidney.

The greater frequency of infection of the right kidney and of the disease in women may be accounted for by the above consideration.

We have recently seen a case in which a congenital polycystic kidney was the seat of an acute infection.

The great majority of infections are due to the pyogenic cocci or to the colon bacillus. Other organisms, as the typhoid bacillus, pneumococci, etc., are occasionally found.

Most authors consider that the lesions in the kidney are due to bacterial emboli. When these are small minute abscesses are formed, usually in the cortex. When a large vessel is blocked the pyramidal lesions so commonly seen are produced. From one or more primary embolic lesions the process spreads by way of the tubules, lymph-spaces, and blood-vessels, and may so involve the whole organ. Cabot, on the other hand, believes that the lesions are not embolic and that the organisms arrive in the kidney in the ordinary process of excretion, lodge in the glomeruli, hence cortical lesions are common. If the infection is massive the whole pyramid is frequently involved, producing a pyramidal lesion, which is mistaken for a septic infarct. He believes that renal infection does not spread laterally beyond the renculus in which it starts, being

limited by the anatomical peculiarities of the organ.

There are produced in the kidney following infection two types of lesions: (1) abscess-formation, and (2) a diffuse inflammatory lesion without the breaking down of tissue.

The first type is usually due to coccus infection. In it we find the kidney enlarged from congestion. Through its substance are at first small separate foci of suppuration surrounded by areas of congestion. The minute abscesses are often in the cortex just beneath the capsule. These may later enlarge and coalesce, destroying the greater part of the organ. Such extensive lesions mean a low virulence or great resistance, otherwise the individual dies of septic poisoning in an earlier stage.

The situation of these abscesses in the cortex explains the frequency of perinephritic abscess. If pus breaks through into the pelvis a pyonephrosis may result. In this form of infection there is apt to be but little pus in the urine.

In the second type the diffuse inflammatory lesion is due usually to colon infection. This organism apparently passes the glomerulus and produces its principal effects in the tubules and pelvis. No suppuration in the kidney substance occurs. The kidney is enlarged from congestion, and there may be subcapsular areas of reddening. On section there are seen irregular reddish and yellowish areas, sometimes involving practically the whole organ, but there is no solution of tissue. Resolution takes place with repair of the connective tissue. Perinephritic abscess does not occur. With this condition there is a well-marked pyelitis, which tends to become chronic and from which may result recurrent attacks of kidney inflammation. So the organ may be destroyed, partly by scarring and partly by pressure from the pelvis. In this form of infection there are apt to be considerable pus and many bacilli in the urine.

A mixed infection with colon and cocci produces the lesions of both. In the urine the colon bacillus predominates, and it may be quite difficult to demonstrate the coccus. This may account for cases of severe suppurative colon infections with perinephritic abscess.

From the standpoints of diagnosis and treatment efforts have been made by several writers to classify the acute infections of the kidney in which the lesion is unilateral in character. It goes without saying that the older classification, based on the terminal pathology, is of no assist-

ance as to either diagnosis or treatment, and should be discarded.

Brewer's classification is almost wholly clinical. He recognizes three types of cases. First, the extremely acute or fulminating type, in which the onset is so severe that the patient may die of a general sepsis, with the local manifestation so marked as to be entirely overlooked. According to him this type is comparatively rare. The clinical picture is that of a septicemia with localized symptoms, when recognized, pointing toward the abdomen and likely to be confused with an acute cholecystitis or pancreatitis or even an appendicitis. There is muscular rigidity on the side of involvement and marked tenderness posteriorly at the costovertebral angle. The condition is usually marked by repeated chills, high fever, and a high leucocyte count. Unfortunately for the diagnosis, the urine in this type of case is not always indicative of the renal character of the lesion, since the abscess or abscesses causing it are usually located in the cortex and not in direct communication with the tubules. The urine therefore may give little evidence as to the location of the trouble; and the diagnosis must then depend upon the clinical signs.

The second type of case is similar to the first, but much less severe in character. A large tender mass in the kidney region is early recognizable, and the case may run a course of ten to fifteen days without great change in the general condition of the patient. The urine usually shows albumin, pus, microorganisms and a few red-blood cells.

According to Brewer there is a third mild type of unilateral kidney infection, most often met with during the course of convalescence from a surgical condition or acute infectious disease in which the pain is slight and the chief signs are a mild fever and tenderness at the costovertebral angle. This type, he thinks, is usually overlooked entirely, and, if observed, ascribed to a mild pyelitis.

Cunningham recognized the two main types of Brewer, and goes a step further in ascribing the fulminating type to infection with the coccus group and the intermediate form to infection with the colon bacillus.

Hugh Cabot has only recently published a classification similar to that of Cunningham, but somewhat elaborated and with the idea of making this a basis for the determination of the appropriate treatment. He justly points out several serious errors that have been made in the past:

1. That of regarding different stages of the same pathological process as different pathologic entities because of their different clinical pictures.

2. That of assuming that similar clinical pictures could be safely treated as if the underlying pathologic condition were the same.

3. The gross neglect of careful early bacteriologic study of the urine because of the inclination to regard all renal conditions as similar in their management; all of which may prove serious for the reason that infections of the kidney with the colon bacillus and with the staphylococci may run quite different courses and require wholly different treatment.

In those cases whose pathology is primarily dependent upon an antecedent lesion of the ureter or lower urinary passages, such as stricture or stone in the ureter, hypertrophy of the prostate, and the like, the first essential is the diagnosis of that condition, and the first consideration in the matter of treatment must be given to the question of what can be done to relieve the primary condition. If nothing can be done to restore this condition to normal, naturally, radical means will be required whatever the infecting organism.

In the presence, then, of an acute infection of the kidney, what considerations will determine the proper course to be pursued? If the case is one of the fulminating type as described, it can hardly be questioned that primary nephrectomy offers the only probability of a cure, and this is reasonably certain if the lesion is unilateral and operation not too long delayed.

If the case belongs to the second or milder class, then the first duty of the attendant will be to determine, if possible, whether the infecting organism is the colon bacillus or whether it belongs to the coccus groups. In case of mixed infection the character of the treatment will naturally be that appropriate to the more virulent organism. If only the colon bacillus is found, then Cabot believes that surgery is almost never indicated or necessary, and that water, rest in bed, and hexamethylenetetramin properly given will be sufficient. The coccus cases, however, are all surgical. The chief difficulty in their recognition arises from the fact that the cocci are often not to be found early in the urine. This view of acute infections of the kidney appears to throw some light on the course of a number of our cases in the past, and affords an explanation of why some extremely bad cases with large kidney masses are able to recover without the aid

of surgery. It narrows the field of surgical treatment down to the coccus infections, and means the saving in the future of many a kidney with a severe colon infection which in the past has been sacrificed with the report of a cure. For of course nephrectomy is a reasonably sure cure for every unilateral infection, the difficult thing being to know when it need not and should not be done.

It is evident, however, that certain exceptions must arise to these simple indications for treatment, for instance, when the same kidney is the seat of repeated infections with the colon bacillus, and gives each time the classic signs of a tender, painful tumor with chills and fever, and with albumin, pus, and blood in the urine. One of our patients had two of these attacks involving the left kidney in the course of six months. In the interval between she felt entirely well. Urine obtained from the left kidney by the ureteral catheter gave a pure culture of the colon bacillus. In a case of this character it would seem that something more than medical treatment is indicated.

When the infecting organism is one of pus-producing cocci, the presence of which has been demonstrated in the urine from the affected kidney, early surgical treatment is indicated, to conserve both the organ and the life of the individual. The nature of the lesions produced, as already described, is such that dissemination throughout the organ, and often beyond it into the perirenal tissues, may be regarded as the rule. The type of operation to be employed will depend chiefly upon the extent of involvement revealed upon its exposure, and this in turn upon the age of the process.

The least mutilating operation that can be done is decapsulation. In those cases in which the infectious process has spread over the surface of the organ beneath the capsule, this procedure would seem to meet the two principal indications: namely, relief of tension on the renal tissues and the establishment of efficient drainage with the resulting diminution of absorption and limitation of spread through the kidney substance. When the kidney cortex is studded with small abscesses, and it is demonstrated by superficial incision that they are limited to the cortex, these may be treated by puncture with the cautery as recommended by Brewer. When, however, abscess-formation has involved the pyramids, it is extremely doubtful whether conservative measures have any place. Under these cir-

cumstances primary nephrectomy is indicated. It is much the safest operation, and immediately inaugurates convalescence. An occasional successful resection has been reported in these cases when the process appears limited to one zone of the kidney, but is attended by grave risks of both primary and secondary hemorrhage, and the probability of the necessity for an ultimate nephrectomy. The convalescence is much prolonged and this in the serious cases is in itself a grave matter.

It is our belief that wide nephrotomy is an operation which has been much too freely employed in the past in the treatment of the conditions under discussion in this paper. In our own experience and in our observation of the work of others, we believe it has most often been used in cases of infection with the colon bacillus. In this class of cases, either no operation whatever should be done or, if the case is one of the recurring type, nephrectomy is the safest operation and the only one that promises a cure.

Statistical studies of the relative merits of nephrotomy and nephrectomy are not of great value since the infecting organism is rarely mentioned; moreover, it is fair to suppose that on the whole the less seriously damaged organs were subjected to nephrotomy, while those most seriously damaged were removed. Yet in a collection of twelve hundred and two cases of all classes Lower found that of those obtaining a definite result, namely, complete recovery or death, nephrotomy showed a mortality of 24.36 per cent, while nephrectomy gave only 15.8 per cent.

Even a complete nephrotomy can drain only such abscesses as are cut by its plane; in the average coccus infection with cortex involvement this can be only a small percentage. Extensive involvement of the perirenal tissues may make nephrectomy impossible, but the probabilities are that in this case the lesion is just beneath the capsule, and neither nephrectomy nor nephrotomy is indicated, but stripping of the capsule.

Should this view of a definite relation between the infective agent and the pathology and the resulting indications for treatment be demonstrated by future observations to be correct, the management of these cases will lose, it may be hoped, the uncertainty which has characterized it in the past. Our own experience covering fifteen cases is, we regret to admit, open to the criticisms outlined above. A few only of the

more recent ones have had proper bacteriologic study. The evidence, however, appears to confirm the relationship, making due allowances for mixed and recurring infections.

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DISCUSSION OF THE THREE PRECEDING PAPERS

DR. ARNOLD SCHWYZER (St. Paul): First of all, as to the paper of Dr. Gilfillan with reference to the course of infection from the bladder up: Apart from infection up through the interior, through the lumen of the ureter, it was found by experiments on animals that, if the lymphatics of the lower portion of the ureter are injected, the communication is very free along the ureter up to the kidney, and then from there to the calices, and then into the surrounding tissue. There are three principal routes, one of which is in the submucosa, another in the muscular layer, and the third one in the adventitial tissue.

I think the doctor mentioned that on the right side we have more infectious conditions in the kidney than on the left, and he pointed out that on account of greater mobility the kidney is more exposed to injury. There is also another cause for that, namely, the frequency of right-sided infections, such as we have in the appendix. If you remember the anatomy of the kidney, outside of the parenchyma is the capsula propria, then we have a fatty lodge. This fat is different from the fat farther out. Then comes a fine outer fascia, and this one does not make a complete lodge but is like a hood, or a dome, open below, so that the lymphatics really have free access there from the pericecal connective tissue. That may be the reason for some of the surface infections of the kidney.

As to the treatment: We have these milder forms of infection where we have numerous little abscesses on the surface of the kidney, a condition which Israel called furunculosis of the kidney. These abscesses occur only on the surface of the kidney, and I have seen a number of these cases. Decapsulation of the kidney with drainage is followed by a speedy recovery. The other cases, where we have miliary abscesses all through the parenchyma, are much more vicious, and I want to mention in this connection one case which throws a little light on the pathology of these cases. A woman came under my observation who had a temperature of 105 degrees with chills. She looked as if she were in a precarious condition. The pains were on the right side. There was turbid urine from the right ureter; the left one was all right. We cut down upon that kidney and found the upper third of it was studded with very many of these little abscesses. We made an incision into the convexity of the kidney and found these abscesses extended clear through the thick-

ness of the upper third of the kidney. There were hundreds of these small abscesses. The lower two-thirds of the kidney seemed entirely healthy. We kept that slight superficial incision in the lower two-thirds as clean as we could and resected the kidney, instead of removing it in its entirety. We saved in this case the lower two-thirds of the kidney. The patient, who was a young woman, then got married. It is now four years since the operation was done, and she has had one or two children, and I am very glad that during pregnancy she had her two kidneys to depend upon.

If the surgeon goes at these cases, which present at times a shaky or barely sufficient indication, he must go at them with profound respect for the parenchyma of the kidney, and especially in a woman it is important for the days of pregnancy to save even part of a kidney if you possibly can.

DR. S. MARX WHITE (Minneapolis): I desire to say a word or two in regard to a couple of points brought out in these papers. First, as to the infections of the kidney: There are a number of cases presenting themselves with the symptoms of renal calculus or renal colic leading to a study for the cause of this colic with the suspicion that stone is present, but in which no stone, or shadow of a stone, is found. Cystoscopic examination and catheterization of the ureters may show a small amount of pus from one pelvis (this is in adults) and other evidences of a pyelitis. What is the cause of such a pyelitis? Dr. Bissell suggested a number of months ago the possibility that certain of these cases were due to types of focal infection, such as we have seen in the mouth. I have since that time, a year and a half ago, seen four cases in which such a combination appeared. In every one of these cases in which no stone was found and no evidences of tuberculosis or other lesion of the kidney, except pyelitis, definite, marked, well-defined abscesses were found at the roots of devitalized teeth. I would like to ask whether others have had the same experience, and, if it has not been called to your attention before, I should like to call it to your attention now.

Further, in Dr. Northington's paper he called attention to the various methods of kidney study. To most men in active practice these finer studies of the blood are impossible. I should like to urge in this connection the use of the phenolsulphonephthalein test of Geraghty and Rowntree. It is easy to carry out. In the majority of cases you can differentiate the first- and second-hour specimens of urine. The specimen of urine differentiated at the end of two hours is usually sufficient, and there is an apparatus on the market, the cost of which is not over five dollars. It is quite inexpensive, and the results are so instructive and satisfactory that I would urge its use by everyone. The apparatus is put out under the name of Dunham, who was the first to devise it.

The reason I am especially urging the test is this: it is not uncommon both in private and clinical practice to find in cases a considerable reduction in the phenolsulphonephthalein output in which the ordinary examination of the urine shows nothing whatever. I have seen a number of these cases, in some of which the output of phenolsulphonephthalein was extremely low. Our study of renal function is incomplete without it, and it is so instructive that it ought not to be omitted.

DR. GILBERT J. THOMAS (Minneapolis): I fully agree with what Dr. White has said relative to the phenolsulphonephthalein test. In my large experience in the use of this drug, the simplicity of its application recommends it as the functional test of choice. All the apparatus that is necessary is a needle of small caliber and an accurately graded 1 c. cm. syringe. The manufacturers of phenolsulphonephthalein now dispense the drug in convenient vials, each containing just enough for one injection. In my experience this test is of greatest help in the consideration of obscure cases of nephritis. It is of great value also in the examination of prostatics when a large amount of residual is present and the amount of damage to the kidney needs to be determined.

Supplementing Dr. Dennis' observations on renal infections, about one and a half years ago I reviewed somewhat over two hundred cases of non-surgical infection of the kidneys and ureters. In 74 per cent of this group I found some severe preceding infection which was a possible origin of the renal involvement. The most frequent sources of infection were the tonsils, teeth, carbuncles, and severe influenza. Complete bacteriologic studies were not made in all the series, but the study of this series led to the conclusion that such antecedent infections predisposed to, or were the direct cause of, the renal invasion.

It would appear from these cases that the avenue of infection is probably from the blood-stream. Sweet and Stewart and others have demonstrated the possibility of ascending infection by lymphatic channels. In a recent demonstration, David concludes that infection may travel along the wall of the ureter from the bladder. In the presence of obstruction from the prostate or other causes, at least when the ureteral valve is overcome and the ureter becomes dilated, renal infection may result from the interchange of the infected urine in the bladder with that in the pelves of the kidneys.

DR. E. L. TUOHY (Duluth): Soon after Dr. Rowntree came out here, I had the pleasure of hearing him before the Pathological Society. I confess that he spoke in a language I did not clearly understand, but we are greatly indebted to him for bringing before us the practical advantage of these laboratory principles as applied to kidney insufficiency.

The phthalein test, which he has done so much to establish, tells us a great deal. As Dr. White has mentioned, we have relied too much on the finding of lesser or greater amounts of albumin or the presence and character of casts in the urine.

A short time ago, Cadbury, reporting the statistics of the Peter Bent Brigham Hospital, analyzed 305 cases of hypertension, arriving at certain conclusions in which they had access to autopsy findings in fully 50 per cent. In view of the very great number of patients who consult us with hypertension, it is interesting to know in what manner they die. Janeway has made the assertion that anybody with a systolic pressure above or near 200 offers presumptive evidence that he will die either by uremia or apoplexy. Cadbury expressed it by stating that in their series the patient died either a slow cardiac death (meaning decompensation and its resultant disorders) or a relatively more rapid cerebral death, this cerebral death being either a hemorrhage or, more commonly, a thrombosis, and including also the

uremic state. Dr. Rowntree admits that uremia is practically a terminal state and few individuals who enter it recover for any considerable length of time. If, therefore, it is a terminal state, the end-result of persistent hypertension and chronic nephritis, we must consider ways and means of determining early enough, in the life cycle of the disease, which cases of hypertension will develop these catastrophes.

Hypertension in ordinary practice is very common. Patients with a continuous diastolic pressure of 110 and systolic pressure of over 190, should be looked upon as prospective nephritics. We have probably too long looked upon chronic interstitial nephritis in the stage of its development relatively late. Those of us who have been in practice ten years or more realize that we have many of these cases, and the responsibility weighs heavily. The course of development probably varies anywhere from two to twenty years, and the late cardiac degenerations accompanying, and toxemias (of which uremia is the most lethal) portend the inevitable disaster. What, then, can be more important than the uncovering of early signs of kidney insufficiency?

Much information is now at hand defining the limits and value of the phthalein test. Mosenthal feels that, while the phthalein test is of the greatest importance and gives accurate data concerning kidneys badly diseased, it is not as sensitive in the so-called functional tests denoting earlier changes. My own experience would bear out this statement. Where you get a low phthalein output, you can rest assured you have definite disturbance of kidney function, but where the phthalein output is high it does not necessarily follow that you have good kidneys to deal with. Where this is most strikingly experienced is in cases of hypertension over forty-five and fifty years of age who need surgical attention. This is the class of patient who is apt to need surgery in the upper abdomen, chronic gall-bladder disease, malignancy, etc., and the surgical mortality is always relatively higher. These tests, as outlined by Dr. Northington, appear complicated, but this is no argument whatever against their use. Time and study may so simplify them, as in all other procedures, to enable them to be carried out by the average practitioner. Mosenthal's test, and its many modifications, are of extreme value, and can be carried out by anybody at all familiar with laboratory procedures.

In view of the fact that proper functioning of the kidneys is so closely tied up with cardiovascular competency, it would appear that any discussion of uremia leaving this factor out is incomplete.

DR. CHARLES N. HENSEL (St. Paul): In regard to the relationship between mouth infection and kidney infection, I wish to cite a case: A young man came to me about a year and a half ago complaining of pain in the loin, pain along the course of the ureter, and pain in the head of the penis. Associated with these symptoms there was frequent scalding urination, urinalysis showing pus cells, red-blood cells, and calcium-oxalate crystals.

Urinary antiseptics had no effect on this condition.

In searching for a focus of infection feeding this kidney condition, I found it in the mouth.

A gunshot wound of the mandible, causing partial ankylosis of the jaw, so that the mouth could be opened but one-half inch, together with poor oral hygiene, had resulted in a dirty mouth, with pus and detritus around

most of the teeth at the gum margins with three crater-like decayed teeth and gums red and inflamed-looking. Mouth-washes and antiseptics to the gums were of no avail. Finally, I urged him to consult his dentist. The dentist admitted that the patient's teeth needed attention, but scoffed at the idea that this dirty mouth could have any relationship to the kidney infection.

In the course of about a month the dentist had the man's teeth and gums in splendid condition. Three weeks after the dentist had completed his work the kidney and bladder symptoms had entirely disappeared, and the urine was free from blood, pus and calcium-oxalate crystals. Six months later the patient had had no return of his former kidney trouble, though he had suffered intermittently for a year prior to having the mouth infection cared for.

DR. A. E. BENJAMIN (Minneapolis): We have passed the point where we can dispute the fact that focal infections have something to do with kidney disease; it has been proven time and again. In my own practice I have seen this illustrated a number of times. One case in particular was a young man who could not obtain any insurance. He suffered from repeated attacks of pus and albumin in the urine and attacks of appendicitis. I urged him to have his appendix taken out in order that he might obtain insurance. He consented to the operation. I removed his appendix, and since that time, which was four years ago, he has had no attacks of pain in the right side nor involvement of the kidney, and the urine has always been perfectly normal.

I wish to emphasize the condition arising on the right side in relation to kidney infection. We find frequently cases in which kidney disease and appendicitis are associated with mucous colitis, and very often we are confused in regard to these associated diseases. We find in doing laparotomies that the right kidney is usually the one that is diseased. The case I operated on yesterday morning will illustrate this. A young woman had had repeated attacks of appendicitis with some albumin and pus in the urine. She was incapacitated at various times, so that it became necessary for her to have something done. In performing the laparotomy, which we decided to do, we found the right kidney was half the size of the left. We found a notch in the middle of the right kidney and a distinct enlargement of the pelvis. The kidney substance had been reduced to one-half the usual size.

I have been surprised in a number of cases in examining the two kidneys, as we usually do in performing laparotomies, to find the right kidney is usually affected, because we find more other disease on the right side. We often have an enlarged cecum, a diseased colon, or a diseased appendix, and it becomes necessary in some of these cases to drain the cecum or ascending colon or remove the appendix before the kidney lesion will clear up or disappear.

DR. ROWNTREE (closing): The importance of mouth infections in connection with diseases of the kidney and in many other diseases cannot be too strongly emphasized. Here in Minnesota, Dr. Rosenow and Dr. Hartzell have emphasized in a way that will travel around the world the relation of focal infections to other diseases. We have a dentist in the University Hospital. Practically all our medical cases are sub-

jected to dental work during their stay in the hospital. Osler says that the majority of cases of chronic interstitial nephritis are latent, which means that most of them are going to be missed unless we take the trouble to hunt them out. We may have renal insufficiency of cardiac origin. One method of differentiating these two types is by the phthalein test. If it is purely a circulatory affair the phthalein is not markedly decreased, but, if it is, the output rapidly returns to normal with the first sign of clinical improvement. I have seen only three cases with increased non-protein nitrogen of the blood when the changes were purely circulatory.

As to the eclamptic type of uremia: I am always suspicious of this diagnosis. I saw one case with repeated attacks of convulsions which was diagnosed by one of the best of men as the eclamptic type of uremia. The patient had marked arteriosclerosis, and I felt that cerebral arteriosclerosis could not be excluded. The renal function was normal, but the patient was having convulsions. It was called uremia. The patient left the hospital, came back in three months, and on his return he was suffering from a hemiplegia. During his stay in the hospital he developed diplegia. He died. Autopsy disclosed cerebral arteriosclerosis. An old hemorrhage present at his first admission to the hospital was undoubtedly responsible for his convulsions. He died of cerebral hemorrhage. He did not have uremia.

I would like to say a word or two about renal test meals. Mosenthal has shortened the time, so that we

can find in one day what it formerly took us two or three days to find. In renal insufficiency in chronic nephritis the specific gravity of the urine is low and fixed, the amount large, and the salt-concentration is low. It may show insufficiency early before the phthalein shows it. In advanced cases of nephritis its use is fraught with danger because of the large amount of nitrogen. I have seen its use result in acute exacerbation of symptoms in at least six cases of advanced nephritis. In mild cases and in hypertension it is of considerable value and can be used without fear.

DR. GILFILLAN (closing): I think there is very little to add in closing. Dr. Schwyzer spoke of the appendix as the focus of infection from which kidney lesions may come, and also the lymphatics from the large intestine. He spoke of the appendix in connection with the ascending colon as being closely connected to the lymphatics of the kidney.

I think it is difficult to determine as to the chronic focal infections as etiological factors in an acute kidney condition. I find pyorrhea is very common in hospital cases, and I hesitate to accept it as the etiological factor unless I can find it more frequently in cases I am investigating than it is in the general run of cases. From the fact that the colon bacillus is so commonly an etiological factor in kidney infections, I think we should rather doubt the tooth-socket as being the focus from which it comes, although it may be. I am not sure about that. I am doubtful of a great many things coming from the alveoli or from pyorrhea.

PITUITRIN

By ALVA A. CONLEY, B. S., M. D.

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Pituitrin, or pituitary extract, is an aqueous solution of the active principle of the posterior lobe of the hypophysis cerebri, or pituitary body. The action of this glandular secretion upon the uterus was discovered by Dale in 1907, and it was first used in labor by W. B. Bell in 1909. It seems to affect all unstriated muscular fibre, the blood-vessels, intestine, and bladder, as well as the uterus, but it contracts the latter most markedly. Its action is manifested in from three to ten minutes after hypodermic injection; and labor pains are both strengthened and made more frequent, the effects lasting from thirty to ninety minutes. Pituitrin will not induce abortion, but used with other measures, such as quinine, castor oil, bougies, etc., may aid in bringing on labor at term.

It is always to be administered hypodermically, either subcutaneously or intramuscularly, and in labor always with an anesthetic at hand. In labor it is sometimes injected directly into the uterine muscle through the abdominal wall, when its ac-

tion is sometimes quicker, but probably no more certain.

Pituitrin has several important uses other than in the field of obstetrics, and these I will mention first. One of the most common uses is in the expulsion of gas from the intestines, accomplished by its characteristic action on the unstriated muscles of the intestines. The most frequent instance is in the intestinal paralysis or atony of post-operative cases. Other instances showing the same action on the bowels where I have used it with good results, are in cases of pneumonia, nephritis and peritonitis. I will cite two cases of nephritis to illustrate: Both were women, about forty-five years of age, and far advanced cases with cardiac incompensation, high blood-pressure, enlarged liver, and extensive tympanites with distress. I gave each large doses of physio and numerous enemata (both low and high), all with excellent results as far as fecal bowel-movement was concerned, but with no passage of gas. Eserin failed. I injected 1 c.c. of pituitrin, giv-

ing high injection of soap and water by bowel at the same time, and in ten minutes gas was coming forth in abundance. I repeated this treatment from time to time as needed on these patients, with good results, though sometimes having to use 2 c.c. of pituitrin. My opinion is that 2 c.c. initial doses in these cases is better than 1 c.c. and is without danger, and that it works better in conjunction with a high enema administered at the same time, commencing as soon as the pituitrin has been injected.

Another use where pituitrin is recommended is in ischuria through its action on the bladder musculature. Therefore it is indicated in ischuria after abdominal, vaginal, or rectal operations, and ischuria after labor. I have noticed that I have never had to catheterize a woman after labor if I had used pituitrin during labor, though this may have simply been a coincidence so far.

In Cesarean section, pituitrin is of great assistance. It is injected directly into the uterine musculature, just before opening the uterus; thus the uterus is firmly contracted soon after delivery of the fetus, preventing hemorrhage and making it easier for the sutures to be taken.

Pituitrin is also used in the diagnosis of labor. If called to a case of supposed beginning labor, and it cannot be ascertained with certainty that labor has actually set in, I inject 0.5 c.c. of pituitrin, when, if the pains are true, labor will soon commence to definitely progress, and the pains will be harder. If the pains are false, pituitrin is not supposed to have any effect on them.

Coming to the use of pituitrin in labor, we have nearly as many different opinions as we have doctors, and one cannot get much help from the various articles on the subject, so I am working it out for myself and have drawn my own preliminary conclusions. Not a few doctors say, "How are you going to know when it works and when labor would have ended quickly anyway? Several times I have gotten ready to inject pituitrin when the pains suddenly became hard and the baby was born; if I had injected the pituitrin I would have given it the credit for delivery." Of course we have all had experiences like this, but I am sure we have all had experiences, too, when we were positive the pituitrin did the work.

Before discussing the various indications and contra-indications, let us consider the dosage of the drug. So far as I recall, there are only two exceptions in which I would give more than 0.5 c.c. at one dose: first, in postpartum hemorrhage,

when I would give 1 or 2 c.c.; second, in some primiparæ, for we know pituitrin often fails completely to show any effect in primiparæ. It seldom fails in multiparæ, even if given in small doses. If necessary I repeat the doses in from thirty to forty-five minutes, but I do not recollect of ever giving more than three doses in one confinement case. The reasons why I object to 1 or 2 c.c. doses are first, too rapid deliveries, causing lacerated cervixes and perineæ; second, pains too severe for mother, with often no relaxation, so that the contractions become titanic; third, more danger of trauma to the child; fourth, more apt to have rupture of the uterus.

Next I will state what seem to me to be contra-indications to the use of pituitrin: first and most important, contracted or deformed pelvis; second, rigid cervix or perineum, or the presence of a scar of a previous third degree tear; third, cases with very high blood-pressure or eclampsia; fourth, malposition of the fetus.

The following are conditions where I would not hesitate to use pituitrin and could thus be called indications:

1. If pains are weak or irregular in the first stage of labor, give one-half of a one-half c.c. ampule, or, if the cervix appears to be very readily dilatable, give 0.5 c.c.

2. Any time in the second stage of labor, if labor is not progressing normally, and there is none of the contra-indications mentioned above. As a rule, I would give 0.5 c.c. in this stage.

3. Postpartum hemorrhage, but in conjunction with ergot. The action of pituitrin wears off in about a half hour, when the hemorrhage is apt to recur. Ergot is a longer-acting drug, and, according to De Lee, the uterus is rendered more susceptible to the action of ergot by previous administration of pituitrin.

If I have used pituitrin during labor I always give a dose of ergot after delivery, and thus far I have not had a postpartum hemorrhage. I believe that most of our hemorrhages occurring after using pituitrin come from lacerated cervixes or perineæ, and not from a relaxed uterus. Since using smaller doses of pituitrin I have not had such precipitate deliveries, and flowing has not occurred at all or has been much less in amount. I presume I have simply been fortunate in not yet having a postpartum hemorrhage, for I am young in the work and am waiting for one any day. At any rate, I will not make the statement that our professor in obstetrics at school did, for fear of a similar fate in the near future. He

had just told the class the day before that with proper management of a labor case there was never any excuse for a doctor ever having postpartum hemorrhage. The very next day he came to class looking rather chagrined and puzzled, and with an apology to make, for the day before after leaving the lecture room he was called to an obstetrical case which, before he had finished, had had so severe a postpartum hemorrhage that he nearly lost his patient as well as himself from fright.

I have tried twice to use pituitrin for the expulsion of the placenta, in the first case with remarkable success; in the second case with remarkable failure. The os uteri contracted down firmly, holding the placenta within. The placenta proved to be firmly adherent and this may explain the failure of its delivery. I am especially interested to know what the experience of others has been in this use of pituitrin.

Pituitrin may be used in dry labor, which I do not consider a contra-indication, but here especially should the dose not be over 0.5 c.c. for fear of injury to the fetus.

It also works splendidly in cases of twins, to aid in the delivery of the second fetus.

In multiparæ I invariably give chloroform when using pituitrin, unless in the early part of the first stage of labor, and I begin to administer it as soon as I have given the pituitrin. In primi-

paræ, unless the head is on the perineum, I do not commence to give the chloroform until I see the pituitrin is going to have effect. I take pleasure in administering chloroform in obstetrical cases and give it in most of my cases, though, of course, not until the second stage of labor has begun. Pituitrin and chloroform properly administered work more successfully than twilight sleep, at least so far as the country practitioner is concerned.

One more interesting point, and one in which doctors' statistics widely differ, is the influence of pituitrin on the number of forceps deliveries. I will simply state my own, but add that I believe pituitrin has reduced the number of forceps deliveries at least 75 per cent. In my last 36 cases I have used forceps only twice, one of these a very large baby, the other a breech presentation.

In conclusion, I do not want to leave the impression that I use pituitrin in all of my cases, for I do not. There is one thing that I firmly believe in, and that is patience. Give the head time to mould before trying to forcibly engage or deliver it, whether with forceps or pituitrin. I am afraid we doctors are responsible for too many women invalids, simply by getting in too big a hurry, especially in applying forceps to our primiparous cases before the head has had time to mould or engage. If necessary, let us give morphine and atropine, and wait.

GASTRIC ULCER*

BY J. C. BAKER, M. D.

RAMONA, SOUTH DAKOTA

I am well aware of the fact that it is presumption on my part to write an article on this subject on which so many erudite men have written and so profoundly, but I base my excuse on the fact that I am presenting this article mainly for the cross-roads practitioner, such as I myself am. This paper is presented from the medicinal standpoint only; and, while it contains nothing new, it is presented in the endeavor to bring out some points usually overlooked by the general practitioner, who must be a specialist in all lines.

First, we ascertain whether the case demands surgical attention or not, and, if not, what to do. This is the field that I have endeavored to enter. Dr. Shuman says, "The 'ulcer case' which does

not readily amend by medical treatment demands surgical attention."

I shall not go deeply into diagnosis, but there are a few symptoms so characteristic they should be sought, as their presence or absence proves our diagnosis:

1. Pain is never absent, but is aggravated by eating, coming on very soon after eating. This is one of the early symptoms. If the ulcer is in the pylorus or duodenum, the ingestion of food allays the pain, and holds it in abeyance until the food reaches the portion affected.

2. Vomiting may or may not be present. It is not an early symptom, but is caused by the irritation of the food on the ulcer, and affords relief from pain, occurring in about two hours after eating.

*Read at the 36th annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

3. Hematemesis or blood in the stool occurs in about one-third of the cases.

4. Great tenderness over the epigastric area, the site of the tender area, locates to a great degree the position of the ulcer.

5. Hyperalgesic areas along the spine. The seventh, eighth, and ninth thoracic vertebrae are the ones related to the stomach.

6. The Einhorn string test locates definitely the portion affected.

7. The peptonized milk test.

8. Acid vomiting or pyrosis.

9. Coppery taste. This coppery taste is due to gastroduodenal catarrh, but an excess of mucus shows that nature is attempting to overcome some form of irritation with this protectant.

10. Periodicity of the symptoms from day to day in their similarity.

11. Distress in the early morning due to the acid accumulation over night; relieved by vomiting or an alkali if gastric, and by the taking of some food, water, or other diluent if duodenal.

12. Röntgen ray. This takes an adept, and is of very little value in the early cases where we need help.

While the general practitioner is not especially familiar with the treatment of this trouble, and is prone to treat these cases medicinally, yet by taking a special interest in this one malady and watching closely several which I had, I base my treatment on certain axioms in physiology.

To treat this trouble scientifically we must ascertain something of the etiology or our reasoning is at naught.

What, then, is the direct cause of the ulcer?

Before and after operation we should never forget that irritative disorder is a factor that has to be eliminated if we wish to obtain lasting results. All these patients suffer from a tendency to an irritative gastric disorder, and it should, therefore, be a general principle to clear up for each individual case the causative factor of the irritation, and arrange accordingly his mode of living, diet, and medication.

We have in the stomach a traumatism subjected to hyperperistalsis and irritation from the stomach contents passing over the inflamed area and the erosion of the stomach contents which are here extremely acid, together producing a condition that is strongly inhibitory to the formation of new granulation tissue.

Gastric ulcers are prone to occur in the presence of certain diseases. Chlorosis often precedes

the development of gastric ulcer. The morbid condition of the blood becomes much accentuated by virtue of the lessened intake of food, resulting in vomiting, pain, and the occurrence of the hemorrhages.

Malaria, tuberculosis, chronic valvular heart disease, Bright's disease, septicemia and pyemia, and local infections of the tonsils, teeth, sinuses, urethra, and prostate may be primary to these ulcers. An hereditary weakness of some portion of the digestive apparatus is a very great predisposing factor.

Virchow advocated the theory of the primary lesion being a plugging of an artery of the part by a thrombus or an embolus, as a result of which an infarct was produced. It is in this way that heart disease would take its part in the formation of a gastric ulcer.

Murphy says, "We must regard the formation of gastric ulcer as a thrombotic process."

Mayo lays great stress on the fact that excessively hot or cold food or drinks may have something to do with ulcer.

Stokes, of Omaha, in a well-written article, states, "The antecedent cause is a circulatory disturbance in the submucosa. This may be general or local, and is probably a thrombosis or an embolism of some of the arteries in this anatomical structure, not necessarily infectious in origin."

Most pathological changes about the duodenum are caused by the increased or diminished blood supply rather than by any trophic nerve influence. This produces congestion and a decreased or an increased blood supply, and, therefore, chronicity.

Chemically the gastric and duodenal ulcer-bearing area stands alone in the entire gastro-intestinal tract, in that it is bathed in hydrochloric acid. When the acidity has reached a certain concentration in the stomach the pylorus opens, the chyme is discharged into the duodenum, which is bathed with hydrochloric acid at practically the same concentration that it leaves the stomach. It is then neutralized by the bile and the pancreatic juices. Peptic ulcers are not found beyond the point of acid chyme. We know that gastric and duodenal ulcers occur only in the area bathed by hydrochloric acid. This alone, however, will not suffice to make an acute ulcer chronic, for experience has shown that ulcers artificially produced in animals heal with remarkable rapidity, while, on the other hand, so many individuals are exposed to lesions from hot food, blows on the epigastrium, and the

like that, could these suffice to produce the disease, ulcers would be more common than experience shows them to be, but add to the above pus and you have a condition producing chronicity.

Sippy says, "There must be some spot or area in the stomach in which the circulation is not normal; otherwise the acids in the stomach would not attack the lining." This lack of circulation he believes due to an infection of the system through the tonsils, teeth (meaning Rigg's disease, or an unclean dental plate), chronic appendicitis, or some latent focus of infection. He places a great deal of stress upon connecting pus in the system with the commencement of the ulcer.

Douglas Stewart, of New York, writes, "In many cases of sore throat an examination of the anus or rectum will reveal there one or more red and sometimes tender spots, streaks, and the like, which may appear like dark-red localized edemas; and these may last for some time after the throat has apparently been cured. These spots may be accompanied by proctitis; but they are analogous to the dermatitis extending around a suppurating wound, and resulting from the immediate contact with pus. They are not ulcers, nor are they erosions, although it is possible they might become either. They are the manifestation of an irritation that comes from an infection. Whether these spots occur higher in the tract is not known, but an irritation and inflammation does arise when the only discernible possibility in the way of a cause is the sepsis that might arise from an infected throat. It is an obstinate form, because the very conditions of the body that aggravate a sore throat, if they do not actually occasion it, will also give rise to this irritative inflammation. When children swallow pus, instead of expectorating it, the pus will pass into the stools and the mucopus will bear the germs with which it started on its journey plus other varieties picked up on its onward course. The alimentary tract has many minute traumatismes that answer perfectly for inoculation purposes."

Another fact to notice is, that ulcers have spring and fall exacerbations, just as does rheumatism, which is also suggestive of an infective nature.

The greatest obstacle in the treatment of this trouble on the part of the country practitioner is in securing the full co-operation of the patient, and especially for the length of time necessary for the complete healing of the ulcer; nevertheless I find that we secure a very intelligent co-

operation on the part of a class that is not cognizant of the full means for the end sought.

First a thorough examination must be made to ascertain, not if there is a primary focal point of infection, but where this point is; and before any other means is used, this must be corrected.

All know how rapidly a traumatism heals on the mucous surface of the mouth, and, according to the best authorities, the same condition prevails as to the mucous surface of the stomach. It is, then, necessary for us to get the secretions as near normal as possible, allowing the reparative processes of nature to be resumed.

Following up the above line of reasoning some authorities advocate fasting the patient to prevent peristalsis, but it has been shown by clinical results that, if we can neutralize the stomach contents, thereby removing two important factors, namely, hyperperistalsis and irritative acid stomach contents, this will allow the natural process of healing to be resumed. When the free hydrochloric acid is neutralized the corrosive action of the secretions stops. Then it is evident that we have only a chemical problem to deal with, for the acidity can be ascertained at will and the amount of alkali necessary to neutralize it.

The heavy magnesium oxide is the neutralizer of choice, and is used with sodium bicarbonate, equal parts by weight in one powder, giving as a dose one-half level teaspoonful. The second powder is composed of bismuth oxide one part and sodium bicarbonate three parts, using as a dose a level teaspoonful.

Use the magnesium-oxide powder sufficiently often to keep the bowels open well, but, if diarrhea occurs, the powder of bismuth is used; then, too, the powder of bismuth acts as a mechanical coating. The patient must be instructed in the use of these powders to control the action of the bowels, never allowing more than two bowel movements in twenty-four hours, if possible.

Starting at 7:30 A. M., give a feeding consisting of 3 oz. of milk and cream in equal parts; in a half hour give powder No. 1; at 8:30 give another feeding, and at 9:00 powder No. 2, keeping this up throughout the day until 7:30 P. M., when the last feeding is taken, then at 8:00 P. M. powder No. 1, at 8:30 powder No. 2, and at 9:00 powder No. 1.

It is impossible to watch the patient in many cases to aspirate and obtain the accurate amount of free acid, so we must go according to the symptoms. After two to four weeks the time

between feedings and the powders is lengthened to one hour, and there is permitted an extra portion at the first feeding, consisting of some gruel or gelatine, giving this in addition to the regular feeding of milk and cream. Then each day another increased feeding is allowed until the full number of feedings is taken up; then, if no untoward symptoms occur, the time of feeding is set for three hours, still alternating with the powders. Allow nothing else to eat, and no more to drink than is avoidable. Generally, the dose of powders will have to be increased as the length of time and the amount of feedings are increased.

The patient should be advised to take as much rest as possible during the entire course of treatment, and especially during the early stages, as any physical exercise increases the acidity. After eating has been resumed, an antitoxic diet is selected, and the importance of a fine state of subdivision of the food by judicious mastication should be firmly impressed on the patient's mind.

Maintaining the tonicity of the colon and correcting any mechanical or pathological fault in the alimentary tract, and advising against highly spiced foods and rapid eating are measures that help constitute the most rational management of such cases, which must be watched for a long time and the normal physiology maintained.

If we believe that every gastric cancer begins upon an ulcer basis—and it is logical to think so—we must treat and teach our ulcer patients very carefully indeed.

DISCUSSION

DR. E. L. PERKINS (Sioux Falls): I want to congratulate Dr. Baker upon his excellent paper. The phase that especially interests me is the matter of treatment. I believe the pendulum is swinging the other way, and that the routine surgical treatment of gastric ulcer interests us less than formerly. I would like especially to urge conservatism in the matter of treatment.

Dr. Wilson, of Minneapolis, recently, in a very excellent talk along this line, emphasized conservatism in treatment, and this point he brought out very clearly, at least he impressed upon me the all-important fact that function, after all, is the ulti-

mate test upon which is based the treatment of chronic gastric ulcer.

In the course of time ulcer of the pylorus results in scar-tissue formation, which in varying degrees inhibits the normal function of the outlet of the stomach. Malnutrition and subsequent deterioration of the general physical condition of the patient results and then only is radical interference indicated. It seems to me the thing we should bear in mind and emphasize is, that the majority of cases of gastric ulcer are amenable to medical treatment. Under careful observation, the use of the fluoroscope and constant vigilance, noting that the patient is growing in strength and not losing, that his general trend is upward and not downward, that he is gaining—we have here the test that ultimately decides for us whether it is a case that needs radical operative interference or whether the patient will recover through medical care.

I would emphasize, then, by way of suggestion, conservatism in the matter of treatment, to watch the cases carefully and see that the patient's well-being is best guarded through conservative, rather than radical, treatment.

DR. J. C. WATERMAN (Burke): I have been very much pleased with this paper. It is very able and very comprehensive. I believe, as has been said, that the pendulum is swinging toward conservative treatment. Gastric ulcer is essentially a disease for the medical man in the beginning, but, after it has been treated, if we find that the condition returns, it soon becomes a case for the surgeon.

The doctor mentioned duodenal ulcer. My experience with this condition is, that the sooner you get it into the hands of a surgeon, the better. I do not believe you get very good results from medical treatment of duodenal ulcer. The treatment of gastric ulcer, of course, is a matter mainly of dietetics. The medical treatment that the doctor has outlined is a help, but the diet is really the treatment for gastric ulcer.

DR. BAKER (closing): The diet is very essential, but in the treatment I have outlined the important thing is the neutralization of the free acid.

The country practitioner must necessarily go largely by symptoms. In hospital work where the patient is at all times under one's hand, it is very different. The patient is the man or the woman of the house, lives miles in the country, and it is impossible for him or her to remain in bed and be waited upon for any length of time. He must be up and around, so we must be guided by symptoms.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

W. A. JONES, M.D., EDITOR

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

AUGUST 1, 1917

STANDARDIZING MILK

An effort is being made throughout the country to improve the milk situation. The plan has been tried out in a few cities in Minnesota, notably at Winona, and the results have been very gratifying. Unfortunately, the State Board of Health is unable, at the present time, to enforce a law regarding the standardizing of milk, but the Board will send out circulars that will be advisory, at least, and it is expected that some further educational means will be provided and, eventually, the State will attain milk that is clean, at least, and valuable as a food.

The National Commission on Milk Standards has published a condensed report, which will give one a clearer idea of the efforts of the Commission.

It will be noted, particularly, that there are four grades of milk, and the Commission proposes a food value standard of 3.25 per cent fat and 8.5 per cent solids not fat. This is a fair requirement, and will give the proper food value to the consumer, whatever grade of milk he buys.

It is necessary to keep butter-fat at a reasonably low per cent, for it is well known that some

cows give milk that contains an enormous quantity of fat, which, before it is consumed by a child, must be reduced, and for that reason, as well as for the sanitary side of the milk question, it is necessary that an educational propaganda of milk be widely disseminated.

COMMON FORM DISEASES FOUND IN ARMY LIFE

Various writers who have taken up this subject, differ in minor particulars concerning the destructive diseases that infest the army. It is stated by some observers that syphilis is the predominant scourge, while we know that, in some countries, perhaps in our own, tuberculosis will take the predominant place.

Nervous breakdowns, manifested by the mental and nervous systems, are becoming more and more evident; consequently, it behooves us to study these two classes of disease, and also to study every recruit for one or the other of these conditions which might incapacitate him for life as a soldier.

Tuberculosis is so common that it is recognized now from all sources; and, not infrequently, in a man who enters business, particularly the business of being a soldier, if he has latent tuberculosis, hard work, preparatory to enlistment and preparatory to army activities, seems to arouse the focus and, before long, a fully developed tuberculosis exists. This has been recognized in France as one of the very definite scourges that have swept over the country.

Years ago smallpox was a common disease in the army, as was typhoid fever; but, owing to the methods of vaccination, both of these have been almost entirely eliminated, except under conditions which make it impossible for troops to keep clean.

The report of the United States Public Health Service, dated April 27, 1917, gives the following figures for the year 1916 for the City of New York, with an estimated population of over five million: Number of cases of tuberculosis reported during that time, 19,297; rate per thousand, 3.444. During the same period there were but 7 cases of smallpox reported, hence the rate per thousand was .001. Heading this, however, and overcapping the tuberculosis reported cases, there were 20,128 cases of syphilis with a rate per thousand of 3.592, hence the peril of syphilis is really greater than the peril of tuberculosis.

Formerly, disease and pestilence, during and

following a war, have killed and disabled more than all the mechanical agencies of death, ancient or modern. With our present understanding of sanitary conditions and the possibility of eliminating some of these diseases, various safeguards have been thrown about the army, which make it probable that, in the next war, wherever and whenever that may be, those suffering from syphilis and tuberculosis will be recognized and eliminated.

The necessity of co-operation between the various examining organizations is vital; and, if camps and neighboring communities can be kept separated and both made clean, the life of a soldier will be much more efficient and his fighting qualities will be greatly enhanced.

The thinking public has awakened to the danger of these diseases, but it is not in this class that the venereal enemy spreads. It is among the ignorant element of society who present to their own detriment "a maze of heredity, circumstance, habit, morals, religion, health, fastidiousness, vanity, desire, curiosity, and a hundred kindred influences."

Various states have passed laws in order to relieve the situation, but so far the reporting of cases has not been brought up to the proper standard, and the result is that both tuberculosis and syphilis are overlooked and simply break out when the individual is put under strain and deprivation.

The time is coming when syphilis will be a common disease among people, with its destructive powers recognized; and it is to be hoped that the State, perhaps Congress, may legislate in some way to either prevent or, at least, to test the early syphilitic. In order to do this, it is necessary to prevent prostitution and to provide suitable recreational facilities and to control the consumption of alcohol and to provide medical service.

The question of preventing an outbreak of insanity among the troops and fleet is a very serious one; and, not infrequently, these cases are not recognized because no adequate history of the individual is obtained. That is, the early life of the man is not sufficiently analyzed, nor are his ancestors scrutinized carefully enough, to bring out his probable instability.

It has been shown that a large number of unstable people have been drafted into the service of the army and navy because it was necessary to obtain the required number; and it has also been shown that, when these same people were

put under conditions which demand every ounce of energy, they have promptly broken down. A man breaks down perhaps because his nervous system is unfit, and because he has engrafted syphilis that is unrecognized. His breakdown then is neurological. If he is constitutionally inferior or is inherently unstable, then his breakdown is mental. Both of these conditions become a burden upon the government, and both must be treated in order to make every soldier a safe individual or he must be invalided home.

When the Medical Department is what it should be, and can be made to be, these three diseases will stand out conspicuously for their absence in men whose physical and mental soundness is the determining factor on the firing-line.

CORRESPONDENCE

STOLEN PRESCRIPTION-BLANKS

TO THE EDITOR: The attention of physicians should be called to the necessity for care in leaving prescription-blanks about the office which the drug fiend may appropriate. A recent experience will illustrate. I was called by 'phone from a St. Paul drug-store a few days ago, and asked if I had issued a prescription for morphine to a certain name and address. I at once replied it is fraudulent, as no such party was known to me, and no such prescription had been issued by me. "Some one has gotten hold of some of your prescription-blanks, Doctor," came back over the wire. Obviously the drug-store was on guard and took the precaution to inquire as to the attempted fraud.

Many doctors, like myself, often step out of their offices upon errands nearby and neglect to lock their door or desk, where writing is done. They expect to be away only a moment, but often it is longer, and unless someone is immediately in charge, theft is easy. This is even more likely to happen in smaller communities where the expectation of such visits is less than in the city, where the stranger is constant in his depredations. A word of caution may serve to prevent others a similar experience.

Very respectfully,

MINOR MORRIS, M. D.

Hopkins, Minn., July 26, 1917.

REPORTS OF SOCIETIES

THE WABASHA COUNTY SOCIETY

The Society held its annual meeting at Wabasha on July 5, with thirteen members and seven guests present.

The business session was held in the morning, and a complimentary dinner was served at the Hotel Anderson, tendered by the Wabasha and Kellogg members.

The program of the afternoon was as follows:

The President's Address—"The Medical Literature Problem and Its Relation to Therapeutics," by Dr. A. A. Rankin, Zumbro Falls; "Report of a Case of Triplets," by Dr. W. B. Heagerty, Mazeppa; "Some Phases of Tuberculosis Relative to Its Diagnosis and Pathology," by Dr. L. F. Sutton, Physician in Charge of the Sanatorium, Wabasha.

After the papers were read all went for a visit to the Buena Vista Sanatorium, by the courtesy of the Wabasha County Tuberculosis Commission, with an address of welcome by Dr. E. H. Bayley, Chairman of the Commission, Lake City.

Obituary resolutions were adopted in memory of the late Dr. W. T. Adams, of Elgin.

An interesting feature of the program was the exhibition of lantern slides in connection with the paper by Dr. Sutton, and remarks by Dr. Samuel Robinson, of the Mayo Clinic, relative to some aspects of tuberculosis; and at the Buena Vista Sanatorium (Wabasha County's institution for the care of tuberculous patients) the demonstration of Dr. Robinson's apparatus for the induction of artificial pneumothorax.

At the business session a committee was appointed to take action concerning revision of fees, and the adoption of a county fee-bill; and the Society took steps to safeguard the practice of any of the members who may be called away to enter military service. And the following officers were elected: President, Dr. W. F. Bleifuss, Elgin; vice-president, Dr. W. W. Nauth, Minneiska; secretary-treasurer, Dr. W. F. Wilson, Lake City; delegate, Dr. A. A. Rankin, Zumbro Falls; alternate, Dr. J. A. Slocum, Plainview; censor for three years, Dr. M. J. Shaughnessy, Wabasha.

W. F. WILSON, M. D.

Secretary.

NEWS ITEMS

Dr. A. Eagan, formerly of Yale, S. D., has located at Niles, Mich.

Dr. C. N. Brooks, of Wentworth, S. D., has moved to Lane, S. D.

Dr. E. S. O'Hare has moved from Washburne, N. D., to Wing, N. D.

Dr. H. C. Parsons, of Aberdeen, S. D., has been admitted to the Reserve Corps.

Dr. H. M. McIntyre, of Eveleth, was married on July 10 to Miss Eileen Mathews, of Ashland, Wis.

The Kandiyohi Public Health Association will henceforth be a unit of the Red Cross Association.

A local Red Cross Society has been organized in Lakefield, with Dr. M. J. James as chairman.

The Great Western Railway Surgeons' Association held its annual meeting last month in Red Wing.

Dr. P. A. Boyum, of Keene, N. D., was married on July 7 to Miss Manda Martinson, in Minneapolis.

Four Minneapolis woman physicians have tendered their services to the Government for hospital work abroad.

Dr. Adolph E. Loberg, of Minneapolis, died last month at the age of 41. Dr. Loberg was a graduate of Hamline.

Dr. William J. Kucera, of New Prague, has been appointed a member of the Red Cross Commission to Rumania.

Dr. R. D. Jenkins, of Waubay, S. D., has been appointed the physician on the Nurses' State Examining Board of South Dakota.

Dr. Felix Ashcroft, of Deadwood, S. D., has been ordered to report at Fort Riley, Kansas, for active service in the trainings camp.

Dr. R. W. Mullen, of Florence, S. D., has been appointed army physician with the South Dakota troops, and expects to go abroad soon.

Dr. Chas. E. Hunt, formerly of Valley City, N. D., has been promoted from Captain to Major of the infirmary of the North Dakota Infantry.

Dr. M. A. Bannon, formerly professor of biology and dean of the School of Medicine at the University of North Dakota, and more recently,

president of the University of Idaho, is now president of Beloit College.

Dr. H. T. Kenney, of Pierre, S. D., has been promoted from First Lieutenant of the Fourth Infantry to the rank of Major in the First South Dakota cavalry regiment.

Dr. Hazel Bonness, a graduate of the Medical School of the University of Minnesota and for several years assistant physician at Vassar, has received an appointment at the State Hospital for the Insane at Rochester.

The Surgeon-General of the U. S. A. has given an exact and official report of the casualties among physicians on the western front of the European war. It is as follows: Killed, 195; wounded, 707; died from sickness, 62.

The members of the Hennepin County Registered Nurses' Association have raised their scale of prices for the first time in ten years. General nursing will cost \$5.00 a day or \$30 a week; obstetrical, \$35 a week; and \$35 for contagious cases.

Dr. J. P. Sedgwick, of Minneapolis, has gone to France to work with the commission for the relief of French children. Dr. Sedgwick was made a major. Drs. N. O. Pearce, of Minneapolis, and J. I. Durand, of Seattle, Wash., accompanied Dr. Sedgwick.

Dr. G. L. Rowntree, Dean of the Department of Medicine in the University of Minnesota, has received a call to the deanship of the Medical Department of the University of Illinois, which he will probably accept. Dr. Rowntree came to Minnesota in January, 1916.

Drs. Alexander Josewitch, H. R. Nordley, and Walter Mareley, who have been attached to the Minneapolis City Health Department, have been ordered to Fort Snelling, where they will have charge of the examination of men believed to be afflicted with tuberculosis.

All physicians and midwives in Minnesota will now receive free of cost silver-nitrate solution for washing the eyes of new-born children, as required by law. The Christian Scientists secured a clause in the law whereby the solution may not be used against the wishes of parents.

Women physicians of Minnesota have formed an organization known as the Minnesota Medical Woman's Association. The officers are Dr. Auten Pine, of St. Paul, president; Dr. Florence Ridgway, of Minneapolis, secretary, and Dr. Elizabeth Woodworth, of Minneapolis, treasurer.

The Rice County Medical Society adopted a new fee-bill at its meeting last month at Faribault. Day calls in the city will be \$2.00, night calls \$3.00, and day telephone consultation \$1.00 and night telephone consultation \$2.00. Country calls will be \$2.00 for the first mile and \$1.00 for each additional mile.

At the mid-summer meeting of the Southern Minnesota Medical Association, held last month at Faribault, stirring resolutions of loyalty to the Government were passed, following the address of Dr. Charles H. Mayo, in which he urged loyalty at the cost of the utmost sacrifice. Dr. Mayo pointed out that previous war failures were largely medical failures.

Dr. L. D. Bristol, of Boston, Mass., who has been engaged in public health administration and education during the past ten years in New York, Minnesota, North Dakota, and Massachusetts, has been appointed State Health Commissioner of Maine. The Health Department of Maine has been reorganized according to the New York-Massachusetts plan.

The Southwestern Minnesota Tuberculosis Sanatorium, near Worthington was opened last week. The sanatorium buildings and land cost about \$100,000, one-half of which the State contributed and one-half was given by the eight counties whose tuberculous patients will go to the sanatorium for treatment. Dr. C. L. Sherman, of Luverne, is president of the Sanatorium Board.

The following Minnesota men are among the 270 who, having passed examinations and qualified, have just been recommended for appointment as assistant surgeons in the U. S. Navy: Drs. Frank J. Anderson, William R. Jepson, Boles A. Rosenthal, William W. Holley, and Robert L. Christie. Neither North Dakota, South Dakota, nor Montana seems to have furnished a man for the naval service.

Three hundred infantile-paralysis victims were treated at the clinic held in St. Paul. The State Board of Health will hold the clinic in a number of the smaller cities of the state. Having been at Minneapolis, St. Paul, Duluth, Brainerd, Wadena, and St. Cloud, it will be held in Sauk Center, Aug. 7-11; Mahanomen, Aug. 14-15; Halstad, Aug. 17-18; Redwood Falls, Aug. 21-23; Mankato, Aug. 29-Sept. 1; Pipestone, Sept. 4-8; Marshall, Sept. 11-14; Rochester, Sept. 18-22, and Winona, Sept. 24-29. All dates are inclusive, and in most cases office hours will be from 10 A. M. to 4 P. M.

The Fifth Annual Mississippi Valley Conference on Tuberculosis will be held in the Twin Cities, in Minneapolis on Oct. 8-9, and in St. Paul on Oct. 10. The Conference aims to bring together all the anti-tuberculosis agencies of the Mississippi Valley, to strengthen and extend the work of the National Association for the Study and Prevention of Tuberculosis, and to arouse the public to the need of concerted action against tuberculosis. Distinguished men will address the various Sections and take part in the Round Tables.

The Montana State Medical Association held its annual meeting in Kalispell last month. The following officers were elected for the current year: President, Dr. Arthur Morrow, of Kalispell; first vice-president, Dr. W. G. Dye, of Great Falls; second vice-president, Dr. H. P. Farnsworth, of Missoula; third vice-president, Dr. A. R. Varco; secretary-treasurer, Dr. E. G. Balsam, Billings; delegate to the A. M. A., Dr. Rudolph Horsky, Helena; alternate, Dr. G. M. Crabb, Deer Lodge. The 1918 meeting will be held at Butte.

The second semi-annual meeting of the Minnesota Sanatorium Association, held July 10, at the St. Paul Hotel was, like the organization on meeting six months ago, an over-flow meeting. To meet a request from the War Department for twelve tuberculosis experts to assist the regular Army Officers at Fort Snelling, Fort Chicamauqua, and Fort Riley, the following committee was designated: Drs. A. T. Laird, George W. Beach, and I. J. Murphy. The meeting was attended by twenty-four physicians from local Sanatorium Boards, also by all attending physicians of the various County Sanatoria, members of the Advisory Commission, and several Public Health Nurses. Addresses were given by the following physicians: Dr. George W. Beach, State Sanatorium; Dr. F. S. Bissell, University Hospital; Dr. Robinson Bosworth, Secretary of the Advisory Commission, and Dr. L. E. Sutton, attending physician at Mineral Springs and Buena Vista Sanatoria.

The Northwestern District Medical Association held its summer meeting at Lake Mitagoshie in the Turtle Mountains near Bottineau, N. D., on July 17. Good roads and the promise of a day or two at the lake overcame the inconvenience of a gathering in an extreme corner of the district, and the attendance was large. The scientific program consisted of papers by Dr. M.

E. Trainer, of Williston, and Dr. H. E. French, Dean of the School of Medicine at the University. The first paper, "Accessory Sinuses of the Nose," was a brief but clear discussion of the anatomy and pathology of the parts in question with a glimpse at the symptomatology and treatment of disease conditions. The second paper, "Recent Studies in the Pharmacology of Alcohol," attempted to present only some of the more recent scientific work on alcohol, for example, that of the Nutrition Laboratory of the Carnegie Institution, and was suggested by the resolutions recently adopted by the American Medical Association. A banquet was served at the East Side Hotel, and the lake was much enjoyed for bathing and boating.

LOCUM TENENCY WANTED

I wish to take a position as locum tenens for the months of August and September. Address 530, care of this office.

OFFICE FOR RENT IN MINNEAPOLIS

A good office for dentist, with two physicians, in Masonic Temple, rent reasonable. Inquire 504 Masonic Temple, Minneapolis, Minn.

OFFICE FOR RENT

A physician's and dentist's office for rent in a good location. Three hospitals near by. Vedeler Drug Store, 2200 Riverside Ave., Minneapolis.

POSITION OFFERED

The undersigned knows of two especially good locations in Minnesota for a German speaking physician. Write at once. Address 541, care of this office.

MINNEAPOLIS PRACTICE OFFERED

I am leaving for war service soon, and will turn over my practice to a physician renting my offices in the P. & S. Bldg., Minneapolis. Address 528 care of this office.

POSITION WANTED

I will substitute for surgeon going to war or out of town. Would consider any opportunity in surgery in Twin Cities or adjacent territory. Address 535, care of this office.

LOCATION OFFERED.

Doctor wanted, preferably German speaking, to locate here. New town, very large territory, assistance offered to right man. Address Timmer Commercial Club, Timmer, N. D.

PRACTICE FOR SALE

A \$4,500 unopposed practice, in richest county of state; crops fine; good roads; collections, 98 per cent. Very large territory, good town, population, 500; railroad division; Soo R. R. appointment. Have good residence; will sacrifice same with practice, \$2,800, part down, balance terms to suit. Object of sale, specializing. Address 537, care of this office.

POSITION IN MINNEAPOLIS OFFICE WANTED

A young woman with five years' experience in a physician's office, desires a new position. Competent stenographer and typewriter. Best of references. Address 522, care of this office.

LOCUM TENENCY WANTED

I desire to take a place as locum tenens, or to buy a practice in South Dakota. I desire a location immediately. Address Dennis Sullivan, M. D., 1022 Eighth Ave. S., Moorhead, Minn.

SCHEIDEL-WESTERN X-RAY COIL FOR SALE

A Scheidel-Western 12-inch X-Ray Coil with two tubes and one stand, all in perfect condition, used by my late husband, is for sale at a very reasonable price. Address 545, care of this office.

LOCUM TENENS WANTED

I want a physician with experience to take my practice in northeastern South Dakota when I leave for military duty. This is a heavy practice and will make a very liberal proposition to the right man. Address 526, care of this office.

POSITION OPEN

A surgeon with a large private hospital in Minnesota, who expects to go to the front, wants some able man to take his place. One experienced in the practice of surgery will be preferred. Write at once. Address 543, care of this office.

ST. PAUL OFFICE FOR SALE

Desirable office located in center of business district at corner of Seventh and Robert streets. Have commission in U. S. Corps. Am subject to be called at any time. Address Dr. N. G. Mortenson, 403 Bremer Arcade, St. Paul.

OFFICE POSITION WANTED

WANTED—By young woman, 26 years old, a position as office girl, country preferred. I have been with late Dr. Frank, of Anoka, seven years. Am qualified for general office work. Can drive a team or run a car. Address 529, care of this office.

OFFICE POSITION WANTED.

A young woman, 26 years old, wants a position as office girl, country preferred. Was with former employer, now deceased, for seven years. Am qualified for general office work. Can drive a team or run a car. Address 529, care of this office.

PRACTICE FOR SALE

Hospital and practice in Northern Minnesota. Average business per month, \$1,000. Hospital and office fully equipped, x-ray and electrical instruments included. Collections 85 per cent. Buyer must be able to do surgery. Address 542 care of this office.

MINNEAPOLIS OFFICES FOR RENT

Sept. 1. Strictly modern well-located six-room heated apartment with dentist's office. Good practice. Close to two schools, and Father Cleary's parish. Busy, rapidly growing, car-line corner. Attractive rent. Also apartment with physician's office. Address 534, care of this office.

POSITION OFFERED

I want a young man to take my practice while I am absent on military duty. Practice is in a fine Minnesota village and pays between \$4,000 and \$5,000 cash. Nothing to buy; only office expenses to pay. If I get the right man, I shall be glad to have him remain permanently. Address 527, care of this office.

PRACTICE FOR SALE

In Minnesota town of 450, heart of lake region, no competition. Collections, 98 per cent. Territory, east 7 miles, west 10 miles, south 17 miles, north 17 miles. Scandinavian settlement. Protestant. Will sell office fixtures and good-will for \$300. Reason for selling, am going into the Navy. Address 536, care of this office.

LOCATION OFFERED

I will rent my ten-room residence office, partly furnished with operating-room and surgical equipment during the war, and arrange to make the work permanent. In Minnesota town of 600, with two railroads. Practice pays \$5,000; chance for surgery. Am commissioned in Medical Reserve Corps. Address 523, care of this office.

PRACTICE OFFERED

I am leaving with the Reserve Corps. Business pays from \$6,000 to \$8,000 a year. Will lease, rent, or sell to right party. Fully equipped office and residence, which I am leaving. A snap for a man who wants to work and make money. Will leave nurse with seven years' experience here if desired. Address 539, care of this office.

PRACTICE FOR SALE

A \$4,000 practice in a Minnesota town of 1,000 inhabitants, 35 miles from the Twin Cities. Competition, one aged physician. Population, German Lutheran and Catholic. Good pay. Office building, a 1914 touring car, and full set of instruments for an up-to-date physician. A good man cannot fail to make good from the start. Reason for selling, joining the Medical Reserve. Half cash; remainder, bankable notes. Address 544, care of this office.

PRACTICE FOR SALE

In Southwestern Minnesota an unopposed \$4,500 to \$5,000 practice in an up-to-date town of 625 population, with a rich surrounding country. Nearest competition 12, 12 and 19 miles. Railroad, insurance and county appointments. No better unopposed practice anywhere. Price, \$8,000 for new, large, modern house, combining residence and office, specially built for doctor. Facilities for doing surgery. Terms to suit. German-Catholic preferred. Address 531, care of this office.

PRACTICE FOR SALE

A \$3,500 to \$4,000 practice in town of 400, in one of the richest communities of Southern Minnesota. Practice is unopposed; competition, N. W., 9 miles; S. W., 9 miles; N. E., 17 miles; S. E., 15 miles. Three towns without doctors within 6, 5, and 7 miles, respectively. Mostly Norwegians, with some Germans and Hollanders. Collection, 99+ per cent. Will sell office equipment and practice for \$400. Must be taken at once as I am going into the Army. Address 525, care of this office.

PUBLISHER'S DEPARTMENT

DICHLORAMINE T. NOW OBTAINABLE IN AMERICA

Dichloramine T, Doctor Dakin's most recent antiseptic described in the *Journal of the American Medical Association* for July 7, is now obtainable in this country from the Abbott Laboratories, Chicago and New York.

THE MOOR" (MUD) BATHS

Waukesha, Wisconsin, is a veritable mecca for the sick and the near-sick; and among its well-known healing institutions is the above-named mineral water and mud-bath institution. It is worthy the highest commendation for the ethical work it is doing in the treatment of patients suffering from a certain line of ailments amenable to this treatment.

Correspondence with physicians is solicited.

THE METROPOLITAN MILK COMPANY

The milk problem is always with us, but in the summer time in the city it is so urgent as to cause parents and physicians great anxiety. Milk is the first suspected source of many epidemics, and it is at the bottom of most diseases of children in the summer months.

The Metropolitan Milk Company is the largest distributor of milk in Minneapolis and it seeks the co-operation of medical men in its endeavor to do its work in the best possible manner, and thus to give the city a pure and sanitary milk.

WALLMAN OPTICAL COMPANY

This company, whose offices are in the Physicians and Surgeons building, 9th and Nicollet, Minneapolis, does an exclusively wholesale and manufacturing business in optical instruments and merchandise.

They deal extensively with medical men and their standing is of the highest. They make and handle high-grade goods, and their dealings make only satisfied customers.

We can recommend them to our readers as dependable men with whom it is a pleasure to deal.

THE CHICAGO LABORATORY

The Chicago Laboratory has medical men of very high standing at the head of its chemical, pathological and bacteriological departments; and they truly put at the service of all medical men their clinical and analytical experience.

Their equipment is complete, and they do all the work that is now done in any private or public laboratory, and their aid, freely offered the profession, may often become invaluable in serious cases.

We strongly recommend men not familiar with their work to correspond with them, and begin to utilize their facilities.

THE MILWAUKEE SANITARIUM

The Milwaukee Sanitarium is located at Wauwatosa, a suburb of Milwaukee, and is one of the oldest institutions in the West for the treatment of nervous and mental diseases. It has a staff of distinguished neurologists,

headed by Dr. Richard Dewey, a man of recognized eminence in his specialty.

Dr. Dewey has built up an institution that is a credit to his profession, to his state, and indeed to the nation. The buildings are thoroughly modern, architecturally attractive, commodious, and equipped with all the appliances that money and skill can procure. These buildings are located in a beautiful wooded park of thirty acres, furnishing for the patients pure air, delightful surroundings, and privacy.

No words of praise can be too great for men who do professional work of this kind in the care of mental cases.

MELLIN'S FOOD

The percentage of infants who are compelled to use artificial foods is very large, and they must be provided for. The wise selection of an artificial, we may say a commercial, food is the work of a wise physician.

The Mellin Food Company, of Boston, has always endeavored to meet this need in a scientific manner, and they have not disgusted medical men by exaggerated claims for their food or by false statements as to what it has done. Moreover, its composition is no secret.

The Company's literature is well worth the attention of any medical man, for organizations of this character seek the best advice obtainable anywhere and at whatever cost.

As a summer food for infants under conditions demanding artificial food, Mellin's is probably unequalled.

SMALL DOSES OF PITUITARY LIQUID

Armour and Company announce the appearance of Pituitary Liquid in $\frac{1}{2}$ c.c. ampoules. This enables the physician who prefers small doses of the posterior pituitary active principle to get one product that is entirely free from preservatives of all kinds.

Pituitary Liquid is physiologically standardized, acts promptly when needed as an oxytocic diuretic, or stimulant.

It is strong, uniform, and, being without preservatives of the chlorbutanol group, may be depended on to produce desirable results.

Pituitary Liquid is in boxes of 6 ampoules: 65 cents for the $\frac{1}{2}$ c.c. and \$1.00 for the 1c.c.

RIVER PINES SANATORIUM FOR TUBERCULOSIS

The ideal conditions essential to the greatest success in the treatment of tuberculosis patients can be somewhat definitely formulated; but, after all, some of these conditions depend upon the temperament of a patient and possibly upon the stage of the disease in his case. These things must be passed upon by the patient's physician in order to find for him the conditions providing the best results for him.

The River Pine Sanatorium, of Stevens Point, Wisconsin, offers advantages that will appeal to every physician as indispensable to almost all tuberculosis patients.

The institution is large enough to make available the best service, both personal and material, and yet not large enough to prevent the personal touch between the patient and those who minister to him, either as attendants or physicians, by whom hope for the best is inspired, and homesickness and despair prevented.

All the elements of the best environment are found

here; and the experience of years of successful work demonstrate this fact.

Dr. J. W. Coon is president and medical director of the sanatorium, which is worthy the highest commendation.

GENUINE ANUSOL SUPPOSITORIES AND PRO-
BILIN PILLS ARE NOW MANUFACTURED
IN THE U. S. A. AND AGAIN AVAILABLE
AT NORMAL PRICES

How often, during the last two years, or so, have you tried your utmost to obtain for some obstinate case of hemorrhoids, or other inflammatory rectal affection, a supply of your standby Anusol Suppositories, only to be informed that they were not to be had at all just now? Or perhaps you located a box somewhere in the trade for which some speculator asked an exorbitant price and your patient found it prohibitive, no matter how much he longed for the relief which he knew from past experience Anusol Suppositories would afford him.

How about your gall-bladder and liver patients who always did so well under Probilin pills and for whom you found it suddenly impossible to obtain them, except perhaps occasionally under great difficulties, and by paying high toll to some one who happened to have a vial?

In both instances, it amounted to getting along without paying the price, or, worse yet, using an unknown, untried substitute.

You will, therefore, welcome the announcement just made by Schering & Glatz, Inc., 150-152 Maiden Lane, New York, the sole licensees for these products in the United States and Canada, that they are now manufacturing and distributing them with a full guarantee that these preparations are absolute equivalents of the formerly imported. For you and your patients' protection, the firm advises that the prices are the normal ones prevailing before the war and that there is absolutely no reason why any druggist should charge more for them.

BATTLE CREEK SANITARIUM

The pathology of former days concerned itself only with things after they had happened. Research was confined mostly to cadavers and the knowledge obtained was only in a general way applied to the extension of medical science. Now, however, this branch has a more direct and practical usefulness. A few up-to-date institutions, to which the Battle Creek Sanitarium has now been added, have a pathologist on duty whenever operations are being performed. If the surgeon finds a growth of the nature of which he is not sure, a portion of it is at once handed to the pathologist. With his microtome, he cuts a slice which may be as thin as one five-thousandth of an inch, and subjects it to the microscope. Upon his diagnosis as to the nature of the disease process depends the decision of the surgeon as to what should be done.

This investigation is done on living tissue frozen instantaneously with liquid carbonic acid, and takes on an average only five minutes. The information thus obtained is a scientific check upon the clinical diagnosis, and is valuable in every surgical case. It is of vital importance in the numerous cases of early cancer, which cannot be diagnosed in any other way, as the early be-

ginning of every cancer is a cellular phenomenon and beyond the concept of the naked eye. The accumulated experience of all modern surgical clinics shows that cancer begins as a local disease, and can be cured at this early stage by radical operation.

The unfortunate results of late operations in cancer were due to the fact that a diagnosis of cancer was not made until a demonstrable and palpable tumor had developed, and the disease spread all through the system. The present-day horror of cancer existing in the lay mind is based on the distressing results of surgical operations—and for that matter of every other known method treatment—in such late and advanced cases.

In early cases surgery offers the greatest chance for cure to the patient. Early operation however postulates early diagnosis by an expert surgical pathologist. About sixty years ago the first laboratory was erected in connection with internal medicine. It is to be hoped in the future no hospital will be found without a laboratory of biopathology adjoining the operating-room.

ASBURY HOSPITAL OF MINNEAPOLIS

Asbury Hospital is frankly a Christian institution, largely denominational in both management and financial support, but simple Christian in its acceptance of patients, as unmistakably shown by the fact that the more than three thousand patients cared for last year came from 18 states and represented 23 denominations, 32 nationalities, and 152 occupations.

Its past history is a history of struggle; its present history is the same; and there will be no change in the future. This is because the needs of the world as seen in the vision of its servants is greater than present or future facilities for meeting such needs will ever be.

Here is a hospital of 300 beds, with an attractive four-story, fireproof building, facing a beautiful park (Elliott), with unexcelled modern equipment.

This hospital is in the service of humanity. Its higher officials,—president, board of directors, and other officials—not only work without pay, but give largely of their means. Its superintendent, Mrs. S. H. Knight, instead of becoming a leader of society, a position open to her because of wealth and family connections, is not superintendent in name, but in fact, and this position she has held for many years, devoting her whole time and all her energies to the work, with a careful supervision of every department, from the boiler room to the garret, including the physical welfare of every employe and patient, and likewise the spiritual welfare of each, at least so far as to see that each is in an environment of love.

Is the discipline of efficiency discarded in such an institution? Yes, so far as it is a discipline of harsh rules—of rigid regulations enforced by martinetts; no, so far as it is essential to the interests of all—to obtaining results—when it becomes the discipline suggested and spontaneously given in cheerful, willing service.

The prices charged by the hospital proper, that is, outside of the charges of a patient's private physician or surgeon, are such as neither to pauperize the poor patient nor to attract, at the expense of private hospitals, the bargain-seeking well-to-do or rich patient.

Asbury Hospital is a type of the undenominational work done by the Christian church through a denominational unit, by which process interest and responsibility are successfully centered in a concrete object.

THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, AUGUST 15, 1917

No. 16

FRACTURES AT THE ELBOW*

By E. P. QUAIN, M. D., F. A. C. S.

BISMARCK, NORTH DAKOTA

Fracture at the elbow is one of the most common bone injuries the general practitioner is called upon to treat. The elbow embodies a large number of anatomical structures with a very delicately adjusted articulation, and presents for that reason some of the most difficult diagnostic and therapeutic problems which the physician has to solve.

Many years ago the famous French surgeon Velpeau stated that "one of the worst things that can happen to a young surgeon beginning practice is to meet with a case of injury of the elbow in a child." With the aid of x-ray and aseptic surgery this statement may seem a little strong today, but the warning is as pertinent now as it was then.

A poorly reduced fracture of the shaft of a long bone may heal with marked anatomic deformity, and yet leave no permanent functional disturbance whatsoever; but a fracture near a joint must be exactly reduced, or more or less permanent disability is almost certain to follow. The chance for disability is increased by the fact that the nearer a fracture is to a joint the more difficult is a correct diagnosis.

Children are especially prone to meet with fracture at the elbow, first, because of the numerous falls upon the outstretched hands before the reflexes have acquired the necessary training to maintain the body balance, and, second, because of the general weakness of bone construction in the child, a weakness which is especially accentuated near the elbow. About ninety per cent of

fractures at the lower end of the humerus are in children.

It is essential to have the normal anatomy and physiology well in mind; otherwise all our examinations and treatment will be purposeless. Without a knowledge of the development of the ossifying centers, it would be useless to attempt an interpretation of x-ray plates in children. For these reasons it may be well to review briefly the main features involved.

Three bones assist in the formation of the elbow: the humerus, the ulna, and the radius. The lower end of the humerus presents the round radial head, or capitellum, at the outer side, and on the inner side the trochlea, which articulates with the ulna. The bone immediately above the articular surface is flattened out and very thin in the anteroposterior diameter, while in a lateral direction it is very wide and terminates in the external and internal epicondyles. This gives great resistance to any violence applied from the side, but it breaks comparatively easily from a force applied in a backward direction.

The shaft of the humerus ossifies before birth, but the entire lower extremity remains cartilaginous until in the second year, when a bone center appears in the part representing the capitellum. In the eleventh year another center develops in the trochlea, and in the twelfth year a third center is seen outside the first one in the external condyle. These three centers unite and form the main part of the epiphysis at the age of thirteen. At seventeen the bony union with the shaft is usually completed. Another bone center appears

*Presented before The Minneapolis, St. Paul & Sault Ste. Marie Railway Surgical Association, Minneapolis, Minn., December 15, 1916.

in the fifth year in the internal epicondyle, which unites with the shaft about the eighteenth year.

The ulna articulates with the trochlear surface of the humerus by means of its greater sigmoid cavity, which is made up of the olecranon process behind and the coronoid in front. The end of the bone is cartilaginous at birth, but bone-growth proceeds very early from the shaft into the olecranon, only the very tip of which develops from a new center, appearing at the tenth year and uniting with the shaft about the sixteenth. The ulna forms a closely fitting hinge-joint with the trochlea of the humerus, which permits only flexion and extension.

The slightly cup-shaped head of the radius articulates with the radial head of the humerus, and

of the accident, whether the cause was a fall on the elbow, on one of the condyles, or on the olecranon; whether the elbow was straight or bent, or whether the outstretched hand struck the ground. A direct blow or kick on the elbow may give the necessary data to work out a correct diagnosis.



Fig. 1. Normal elbow of a child three years old; lateral view, showing the bone center of the capitellum.

also against the lesser sigmoid cavity on the coronoid process of the ulna by the orbicular ligament. The radiohumeral articulation represents a ball-and-socket joint. In the head of the radius a bone center beginning in the fifth year unites with the shaft in the eighteenth year.

The capsule is attached near the outer margin of the capitellum and the inner margin of the trochlea, but behind and in front it passes to the upper part of the olecranon and coronoid fossæ, respectively. It is reinforced by lateral ligaments which pass toward the anterior surface of the joint and prevent over-extension. The functions of the elbow are extension, usually to a point just beyond 190 degrees; flexion to an angle of about 30 degrees with the humerus; and supination and pronation of the forearm.

The first consideration on meeting the patient is to obtain as nearly as possible an exact history



Fig. 2. Same as Fig. 1. Anteroposterior view with the elbow flexed.

In the physical examination it is important to compare the injured limb with the normal, which means that the patient must have both arms and also the thorax undressed. On the normal elbow



Fig. 3. Normal elbow of a child ten years old; lateral view.

we find by inspection and palpation four bony points, which form the normal anatomical landmarks: the two epicondyles, the olecranon process, and the head of the radius. When the elbow is at full extension the epicondyles and the top of

the olecranon are in a straight line. If the forearm is flexed to a right angle with the arm, this line will be changed to a right angle with its apex at the olecranon. The head of the radius can be felt posteriorly about one-half inch below the external condyle. The carrying angle of the forearm deviates about ten degrees from the axis of the arm. Careful comparison between the normal and the injured limb will demonstrate any deviation from normal in the distances between the four bony points, as well as in the elbow movements. Deformity may be so evident that the examination may proceed at once to determine the particular kind of fracture. But more often it is

withdraw the liquid blood. The removal of tension produces immediate relief from pain, and makes the structures more pliable. It is needless to say that this must not be attempted except under strictest aseptic technic.

Crepitus as a positive sign of fracture was a fact known before the time of Hippocrates. In reality it is of quite secondary importance in making a diagnosis. The bone may be impacted, one or both ends may be imbedded in lacerated muscle, or fascia or periosteum may be interposed, and in either case crepitus is absent.

Pain is of far greater importance. To make the best use of this symptom for diagnostic pur-

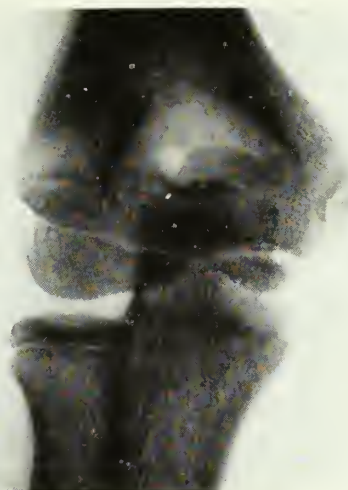


Fig. 4. Same as Fig. 3, anteroposterior view.



Fig. 5. Normal elbow of a young adult.

necessary to try out the extent of flexion possible,—whether hyperextension is present and whether an abnormal abduction or adduction can be obtained.

Hemorrhage takes place in every fracture. When the quantity of extravasated blood is great it forms a positive obstruction to examination and to the manipulations and movements necessary for reduction. If the fracture involves one condyle only, this is often indicated by the hemorrhage being confined to this side as a subcutaneous swelling. The presence of blood in the elbow-joint is evidenced by a distension of the capsule. When the entire region is swollen and subcutaneous hemorrhage is marked, it is still possible to demonstrate distension of the capsule on either side of the olecranon. Fluctuation may be produced from one side of the olecranon to the other. Before attempting reduction of the joint distended with blood it is often good practice to insert an aspirating needle through the capsule and

pose, place the limb in the most comfortable position possible, either hanging from the shoulder or resting on a pillow. Then give a gentle tap over the end of the suspected bone in a direction corresponding to its long axis so as to push the fragments slightly together. The pain will be definitely aggravated at the point of fracture. Light pressure over the bone with the end of the finger, or with the end of a probe or lead-pencil, causes no special pain except at the fracture.

The importance of the x-ray in the examination of fractures and in the control of their treatment is so well known that arguments for its use are unnecessary. Even if the patient often must receive the first attention without the benefit of a röntgenogram no effort should be spared to reach as soon as possible someone competent to take x-ray plates and to translate their meaning. The people now demand to be shown their bone injuries, and they are even more insistent that they be shown the results of treatment. If the re-

sults are functionally unsatisfactory, the patient is almost certain to find an opportunity to have the disfigurement transcribed to an x-ray plate. Most malpractice suits are based on alleged shortcomings either in the recognition or in the treatment of fractures. Without x-ray plates to show the pathological condition present before treatment was begun, the defendant may find himself in a feeble condition to fight a prosecution which is trying to prove that the petitioner's last condition is worse than the first.

The great majority of elbow fractures are in the humerus. Among children between the ages of six and ten years this injury is so common that German authors have called it "Schülerfraktur," or schoolboy fracture. The variety most frequently seen is the *transverse supracondylar*

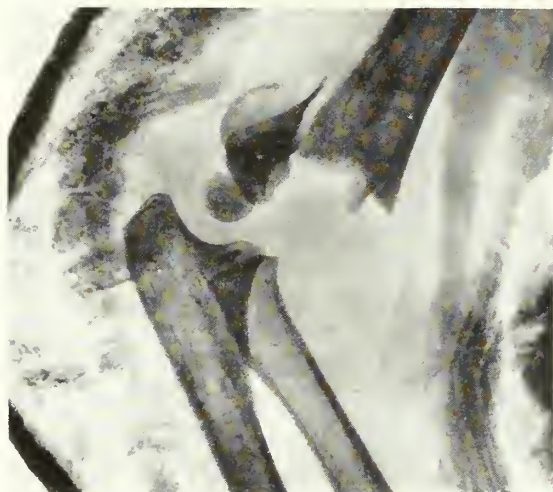


Fig. 6. Supracondylar fracture in a boy four years old; inefficient attempts at reduction; plaster cast.

fracture. This was formerly thought to be an epiphyseal separation. More recent x-ray studies have shown this to be wrong, and demonstrated that the lower epiphysis is very seldom loosened from the shaft. Since the epiphysis is not fully formed until the thirteenth year, and since the internal part of the lower end of the humerus has no epiphysis in the usual sense of the word, it is evident that the fracture passes through the lower end of the shaft.

The violence in most instances is received from a fall on the outstretched hand, the force being exerted first directly by the radius on the capitulum of the humerus. The close ligamentous attachment between radius and ulna transmits the upward thrust of the radius to the trochlea indirectly through the ulna. The elbow receives the weight of the body at full extension, which now

becomes a hyperextension, and, since the fibrous joint capsule in a child is more unyielding than the bone, the bone begins to break on the anterior surface. A continuation of the force of the fall, still exerted backward on the humeral end, causes the fracture line to rise higher on the posterior

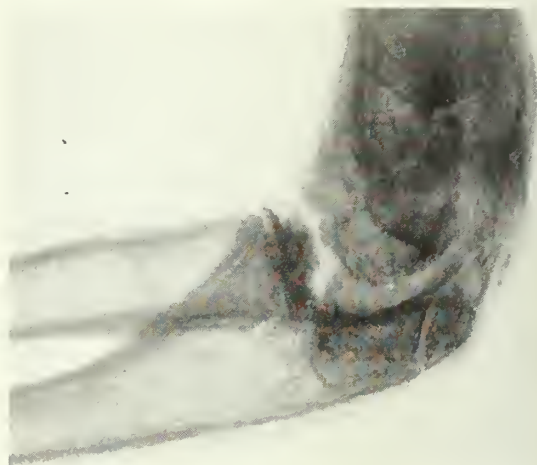


Fig. 7. Ankylosis following supracondylar fracture improperly treated with too early and forcible passive movements; child ten years old.

surface than on the anterior. The contracting triceps muscle assists in pulling the fractured end of the bone still farther backward. A similarly applied force to an individual well past adoles-



Fig. 8. Typical supracondylar fracture ("extension fracture") in a child nine years old.

cence is more apt to cause an anterior tear in the capsule and a posterior dislocation of the elbow.

A fracture of this kind is not, as a rule, difficult to recognize. The olecranon and the epicondyles have their normal relations to one another, and

the fracture is usually extra-articular. But the olecranon lies behind its normal situation, and there is a deep depression immediately above the joint. There is abnormal mobility, especially abduction and adduction. Pain is elicited, not from pressure on the epicondyles, but from a point higher up. By pulling the forearm forward the deformity is readily decreased, but it returns as soon as the hold is released. This distinguishes the injury from backward dislocation and may give crepitus. The forearm cannot be flexed beyond a right angle, but can be extended past normal.

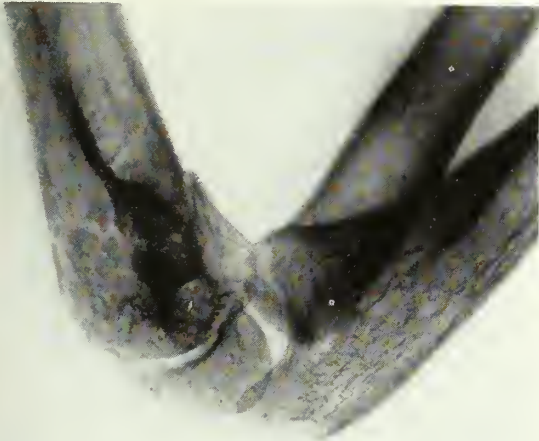


Fig. 9. Same as Fig. 8. Properly reduced.

A forward dislocation of the lower fragment in a transverse fracture is rare. It is generally produced directly from a fall on the flexed elbow or from a blow from behind. In such a case, the bony landmarks are displaced forward, and the elbow is acutely flexed. Full extension is impossible.

The so-called "diacondylar" fracture is an intra-articular transverse fracture, which passes from condyle to condyle either through or just above the capitellum and the trochlea. It is produced by a direct violence from behind, which knocks the articulating surface forward. Its signs and symptoms may resemble those of the supra-condylar, but differ in one point. The elbow is in acute flexion, and hyperextension is impossible. It can be positively diagnosed only from the x-ray findings.

Fracture of the *external condyle* is next to the transverse supracondylar in frequency. It passes into the joint, and the fracture line may extend even into the trochlea. There is hemorrhage into

the joint, but the pain may be moderate, especially if the ulna retains its normal grasp on the trochlea and internal condyle, which prevents excessive mobility. A separation of the fragment downward is usual, and the carrying angle is therefore lost. It may be caused by direct injury or by a fall on the outstretched hand, driving the radius against the condyle.

Fracture of the *internal condyle* is nearly always due to a fall or blow against an acutely

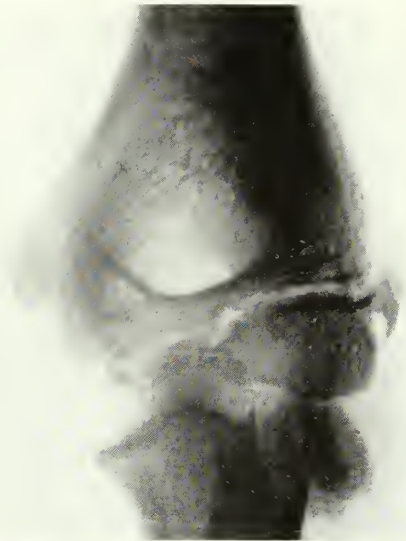


Fig. 10. Diacondylar ("flexion") fracture; boy fourteen years old; also fracture of the head of the radius.

flexed elbow which acts directly against the trochlea. The fracture line passes from the internal supra-condylar ridge above into the trochlear surface within the joint. This liberates the ulnar articulation so that the triceps and brachialis anticus muscles can lift the entire fractured condyle upward. If there is a very free displacement the forearm will rotate in the ball-and-socket joint of the radius.

As a general plan of *treatment* for all fractures thus far discussed we can recommend most highly the reduction and fixation at acute flexion described by Jones, Neuhof, Choyce, and others. Ashhurst wrote a famous monograph in favor of this method, and I am especially indebted to this author for his excellent demonstrations of the anatomic relations.

We have followed this practice more or less diligently during the past four years, and the results have been very decidedly improved over all older methods employed by us. In transverse supracondylar fractures the main steps are

as follows: Reduction is made by hyperextension of the forearm and manipulation of the lower fragment in mesh with the upper, after which the elbow is brought to acute flexion with the hand in full supination against the shoulder. The angle should be as acute as possible without occluding the radial artery. In this position the limb is fixed with strips of adhesive plaster. The plaster is placed first from the radial side of the forearm above the wrist over the dorsal surface inward; then the plaster strip is given a half twist, and is attached around the outer surface of the arm. Several strips are thus attached, and a figure-of-eight bandage is wound around



Fig. 11. Same as Fig. 10. Lateral view.

the wrist and shoulder to reinforce the plaster. This manner of applying the adhesive plaster helps to retain the supination, and prevents pressure on the brachial artery. This acute flexion stretches the triceps tendon tightly over the posterior surface of the fractured part of the humerus and places a muscle cushion from arm and forearm against the anterior surface. The immediate fixation of the fracture, therefore, is composed of autogenous splints. The enforced supination holds the condyles in their proper position and retains the carrying angle of the forearm.

In diacondylar fracture readjustment must be made under *x*-ray guidance, after which hyperflexion gives the best fixation of the parts from the principles described. However, in the only case of this kind that came to my notice, good results were obtained from full extension. This was done because a fracture of the head of the radius complicated the situation.

In external condyle fracture it is very essential first to restore the carrying angle by the elevation of the condyle. Hyperflexion is then carefully made so as not to disturb the reduction, and the adhesive plaster is applied as before.

The internal condyle, which is displaced upward after fracture, is more easily forced back into place by acute flexion of the ulna than by any other non-operative means.

Supracondylar transverse fractures may be complicated by other fracture lines, dividing the lower fragment into two or more parts and producing the T and Y fractures. In most cases it is the result of a direct violence over the



Fig. 12. Fracture external condyle in a boy three years of age.

olecranon, which drives the condyles apart. Various atypical lines of fracture and extensive comminutions may follow many industrial accidents. All such graver complications produce severe hemorrhage, which distends the capsule and the space between broken bones and lacerated muscle, and distorts the normal contour almost beyond recognition. In less complicated T and Y fractures one of the condyles usually retains its normal distance from the ulna, while the other shows a lateral displacement. Pressing the condyles together causes crepitus. The *x*-ray alone can unravel many of these bone mysteries and operative treatment will generally give the best results.

Fractures of the *epicondyles* are extra-articular, and do not often cause severe symptoms. The wide and firm muscular attachments over their surfaces prevent extensive displacements. Treatment may be confined to snug bandages, and rest with the elbow at a right angle.

Simple fracture of the *olecranon* presents no special difficulty of diagnosis, as it is subcutaneous and easily palpable. It occurs near the neck of the process, and is not an epiphyseal separation even in children. The displacement may be very great, or it may be none at all, the periosteum and the triceps tendon holding intact over a subperiosteal fracture. A valuable point in evidence of subperiosteal fracture is the inability of the triceps to extend the forearm if the arm be held in the horizontal position with the hand hanging down at right angle. The ability to flex, but not to extend, the forearm is a constant sign in this fracture. When the periosteum is

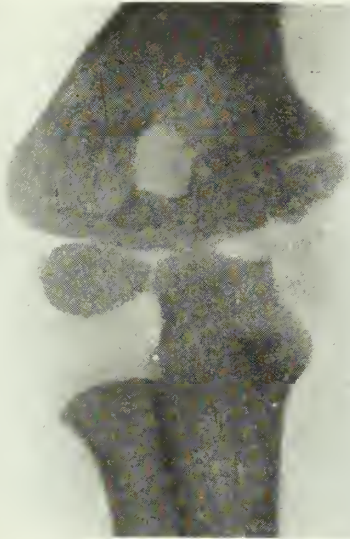


Fig. 13. Fracture of the internal condyle; old, unreduced; cubitus varus; in a boy six years of age.

torn through, this fracture also is an intra-articular one, and demands the special care and mature consideration we owe to all joint complications. The treatment depends on the extent of displacement. If the displacement is less than one-half inch, a strip of adhesive plaster may be applied over the tip of the bone in such a way as to approximate it to the shaft. The forearm is then dressed with a cast or splint at full extension to relax the triceps. Passive movements must be practiced very carefully in the after-treatment, for bony union is apt to be delayed. If the displacement is one-half inch or over, open operation is advisable.

Fracture of the *coronoid process* is a very rare occurrence, and can be verified only by the x-ray. Its logical treatment is flexion and relaxation of the brachialis anticus muscle, which tends to lift the process in front of the joint.

The *head of the radius* may be fractured longitudinally, and the neck transversely. After x-ray determination of the injury, replacement by manipulation and fixation of the elbow at right angles may attain the object of treatment, but operative interference will, as a rule, be the more successful therapy.

Within the past four years there have been under my treatment 38 recent, or nearly recent, fractures at the elbow from which fairly good clinical records have been kept. Of these the



Fig. 14. Fracture of the internal epicondyle in a boy sixteen years of age.

following classification is believed to be reasonably correct and has been verified by röntgenography:

Humerus	
Supracondylar fractures	17
External condyle fractures.....	6
Internal condyle fractures.....	2
Epitrochlear fractures	1
Supracondylar Y fractures	2
Diacondylar fractures	1
Ulna	
Olecranon process fractures.....	5
Coronoid process fractures.....	1
Radius	
Head of, fractures.....	3

In regard to the ages of the patients it is interesting to note that all the fractures of the ulna and radius, except a radial-head fracture in a boy of 14 with a diacondylar fracture, together

with the two supracondylar Y fractures, were in adults, while all other humerus fractures were in children.

It is a remarkable fact that one of the most helpful, and at the same time one of the simplest therapeutic agents in the treatment of simple fractures is very seldom employed. It is undoubtedly the fault of a hurried system of medical education in the past that so few medical men have acquired the proper knowledge of the value of massage. Massage properly applied to

parts, and brings about an earlier return to normal function. Early massage and passive movements are of especial value in fractures near a joint.

Statements made by Lane, among others, to the effect that early massage tends to cause excessive callus-formation are undoubtedly based on observations where massage was given inexpertly and too forcibly. Neuhof and Wolf made a very instructive study of one hundred consecutive cases of elbow fractures, and the results of hyper-



Fig. 15. Fracture of the olecranon and the coronoid processes and of the head of the radius; adult; railroad injury.



Fig. 16. Same as Fig. 15 after plating of the olecranon, excision of the head and the radius, and suturing of the coronoid.

the region of a fracture has a decidedly beneficial effect. It takes skill and experience, and consumes considerable time from a busy practitioner, but the results are so satisfactory to both doctor and patient that it should not be neglected. The gentle hand of a masseuse, or a nurse trained in massage, is better suited for giving massage than is the average doctor. If begun very gently so as not to cause discomfort, it will be possible after a few treatments to apply it even over the fracture itself without causing muscle-spasm. Massage allays pain, removes extravasations of blood and serum, reduces swelling, and simplifies reduction. It improves the circulation and, therefore, the nutrition of the

flexion treatment in combination with early massage and passive movements. Their tabulations tend to show that perfect result depends more on these features in management than it does on the variety of fracture. The best results were obtained where massage and passive movements of the joint were begun within the first week. Of 29 patients treated thus early 27 were discharged with perfect result, while in the 20 cases where passive movements were not begun until a month after the injury, 19 were finally discharged with defective function, and only one with a good joint. Other authors have made the same observations, though with less pronounced difference in results. All lay emphasis on the fact that

both massage and passive movements must be gentle and given without causing pain.

If the hyperflexion is maintained by adhesive strips, as suggested above, it will be easy to begin massage immediately, since the elbow is exposed at all times. Passive movements should not be begun as a routine in less than ten or fifteen days. The same gentle manipulating is necessary with the movements as with massage. If pain is produced, harm is done. The movements should begin merely with a gradual relaxation of the acute flexion. One or two slight movements of extension and flexion should be performed every day or two. After each of these treatments the bandage should be reapplied in acute flexion; but the increasing extension should be so gradual as to reach a right angle

a constitutional disease or a total destruction of essential anatomy. Faulty reduction invites faulty anatomy and faulty function. Good immediate reduction, but defective fixation of the fractured parts, will do the same. Perfect reduction with perfect fixation and after-treatment will be followed by perfect function in nearly 100 per cent of our patients. This may be impossible in the hands of any one of us, but it should be the ideal toward which our professional devotion should compel us to strive.

While the main argument in this paper is in favor of hyperflexion in the treatment of elbow fractures as a general principle, I do not want to be classed as an advocate of the old practice of always associating certain methods of treatment with certain fractures. It is better to review carefully the anatomy of the part, listen



Fig. 17. Author's method of applying adhesive plaster to retain acute flexion and supination.



Fig. 18. Bandage applied, leaving the elbow free for examination and massage.

only at the end of a month after the fracture, according to Ashhurst. A triangular sling may then be worn for a week or two, after which the patient may begin active movements. The fingers and the wrist should be moved actively but gently by the patient after the first week.

Simple fractures of the elbow, which are promptly diagnosed and treated along the lines suggested, will, with increasing experience, give good, if not entirely perfect, results in a higher and higher percentage of cases. On the other hand, a very slight injury to a joint, if overlooked or unwisely managed in treatment, may be followed by permanent disability. An excessive callus-formation into the joint at the line of an improperly replaced fragment is often followed by ankylosis. If we could always command sufficient judgment and mechanical skill, we would rarely have an ankylosis following a simple fracture into a joint, except it were due to

to the history of the accident, study the mechanics producing the injury, examine the abnormal location of the fragments and the displaced anatomic structures, and consider the direction of the forces necessary to make proper reposition; then, and not until then, to choose a method of fixation that will hold this particular fracture in a replaced position until healing is well under way. This pre-supposes much knowledge and specialized wisdom,—knowledge of anatomy, physiology, pathology, physics, and photography, finally also of dressmaking, blacksmithing, and carpentry. To treat fractures successfully we must acquire this judgment and skill, practically if we can, from books if we must.

A great many bone and joint injuries are irreparable without open operation, and this should be advised at once after skillful but unsuccessful efforts at reduction. Indications and technic for

open operations are not subjects for discussion in this paper, but it must be urged upon every practitioner of medicine not to allow a non-reduced fracture, especially if near a joint, to drift into the second and third week after the accident before obtaining the advice and benefit of experienced surgery. If the result of treatment is unsatisfactory to the patient, you may be sure that he will sooner or later be convinced, and perhaps justly so, that his disability was amenable to proper surgery at one time. Unfortunately, it is only in the first week after a fracture, before beginning of callus-formation, that surgery promises its best results.

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WIRE FILIGREE IN THE CLOSURE OF LARGE HERNIAS*

By H. B. SWEETSER, M. D., F. A. C. S.

MINNEAPOLIS

In moderate-sized hernias with strong and easily approximated edges, an autoplasmic repair with absorbable sutures will probably always remain the method of choice, and will result in fewer complications and more cures than if permanent, non-absorbable sutures are used. Unfortunately, all hernias do not present so simple a problem. Not infrequently there are cases in which the hernial opening is so large that it is evidently impossible to bring the fascial edges together, or in which, even if the edges can be brought together, the tissues available for approximation are so attenuated they will evidently offer a very feeble barrier against recurrence. Such cases present a very puzzling problem, one, at first sight, almost impossible of successful solution.

Ordinarily, these patients are very stout with pendulous abdomens containing many inches of fat, because of which pads and bandages fail entirely to retain the hernial contents. These persons are very seriously crippled, and most of them are totally incapacitated from participating in the ordinary duties of life. Quite often they give a history of having been already subjected to one or more previous unsuccessful attempts at repair, which have resulted only in the production of much scar tissue and an increase in the size of the hiatus. Any procedure, therefore, which offers the best chance of successful repair with the least danger of making the condition worse

in the event of failure, ought to be worthy of our serious consideration.

These cases evidently are amenable to cure only by the insertion of some extraneous substance to bridge the gap, which substance shall become permanently a part of the abdominal wall. Such insert must be either a transplant of living tissue or a foreign body. Of the latter, fine silver wire, in the form of a fretwork or filigree, has been most extensively used. Of living tissue the most available and the most likely to live, is the fascia lata taken from the leg. Dr. Arthur T. Mann, of this city, has reported its successful use in one case in 1914. The method, however, has not been extensively used, probably because it carries with it several disadvantages. In the first place, if the graft is large there is considerable danger that it may necrose, especially in the presence of infection; and, in the second, a preliminary operation of rather formidable proportions is necessary, in which the muscles of the leg are deprived of their proper sheath. Moreover, in case of failure, the further supply of graft is limited; and, besides, the patient may refuse any second attempt which entails a double operation.

Silver-wire filigree for the cure of these large hernias was first used in 1900, in Germany, by both Witzel and Goepel. Since then a number of surgeons have reported quite remarkable successes from its use. In this country Willy Meyer was the first to use it, and was followed by Wiener of New York, Perry of Massachusetts,

*Read at the 48th annual meeting of the Minnesota State Medical Association, at Minneapolis, October 12 and 13, 1916.

and Willard Bartlett of St. Louis. All of them have reported successes in very large hernias. Nevertheless, the method seems not to have received the attention which it apparently merits.

Witzel manufactured his filigree during the operation, a long and tedious method. Far better and quicker was the ready-made filigree of Goepel. It took the form at first of a rigid framework of wires crossing at right angles, as in the ordinary mosquito netting. This, how-

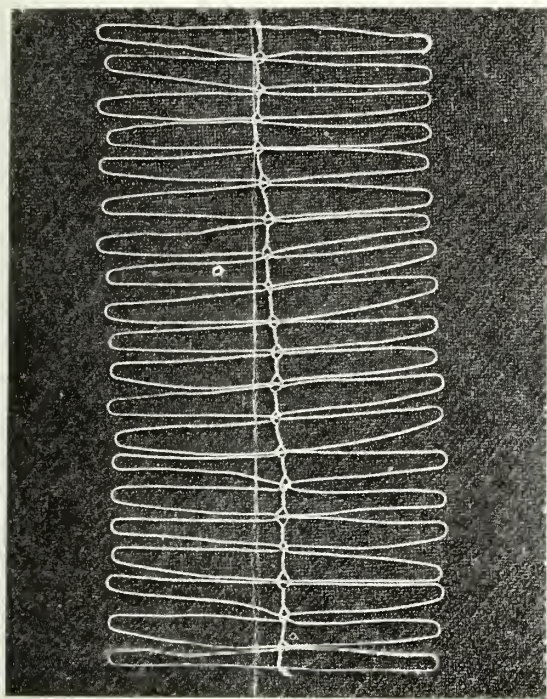


Fig. 1. The form of filigree for general use.—From Willard Bartlett's paper on "Improved filigree for the repair of large defects in the abdominal wall" in *Annals of Surgery*, July, 1903.

ever, had the disadvantage of not accommodating itself to the movements of the abdominal wall, and therefore of being uncomfortable to the patient.

Bartlett, in 1903, taking advantage of the fact that scars in the abdominal wall spread laterally, but not longitudinally, overcame this objection, and invented a form of filigree which is so flexible that the patient is entirely unaware, as a rule, of its presence. As seen from the model, it consists of a series of loops, held in the center by one longitudinal strand. It is very quickly and easily made, and contains the minimum amount of foreign material. It must be large enough to extend one or two inches beyond the hernial edge for anchorage, and, according to

Bartlett, need only be attached at its central strand by a few sutures, to hold it from being displaced during the operation; however, from a study of the stereoscopic skiagram in my case, I think it would have kept its position better if the loops also had been sutured to the tissue. This form of filigree has not been improved upon, and is the one now most extensively used.

During the past year I have operated on two such very large hernias by this method, one entirely successful, the other a partial failure, because of poor technic. These I wish to present, briefly, with a few comments.

CASE 1.—Mrs. H., aged 30 years, one child, 13 years old; a short and very stout woman, weighing about two hundred pounds. She was seen in January of this

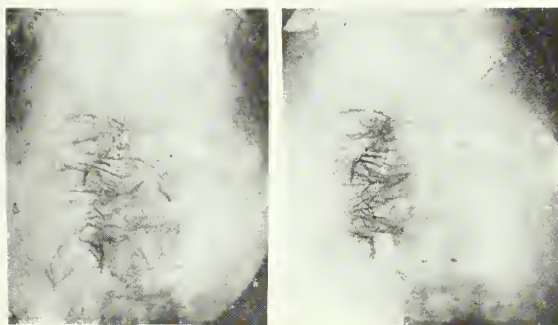


Fig. 2. Stereoscopic x-ray view of the sutured part.

year, and gave the following history: Seven years ago the appendix and right ovary were removed through a median incision. Although primary union was obtained and the patient remained in bed three weeks, yet a small hernia developed one week after getting up. This was probably due to excessive vomiting, which lasted for several days after the operation, as it did after each subsequent operation. Following this, four unsuccessful attempts at closure were made, each one only serving to increase the size of the defect. The last attempt was made two years ago. Just prior to her visit to me she had been discouraged, at another clinic, from operation, until after an effort had been made to reduce her size, because of the probable unsatisfactory result in the light of the previous failures.

On examination the following conditions presented: The abdominal wall was pendulous, with a very thick layer of fat. In the median line, extending from the pubic bone to above the navel, was a hernial opening measuring five inches vertically by three and one-half inches transversely. With the patient erect the tumor protruded three inches beyond the surface, and extended laterally far beyond the margin of the hernial opening. The surface was lobulated, as if the sac were in compartments. Pads or bandages were unable to hold the contents within the abdomen, and she was absolutely incapacitated.

Operation February 29, 1916. After dissecting out all pockets and freeing the edges of all scar tissue, the peritoneum was closed. Over this was laid a large filigree of the Bartlett type, five inches long by three

and one-half inches wide, which, however, only just reached the upper angle. Over this the muscles were drawn as far as possible without producing tension. The edges touched above and below, but left a gap of one-half inch in the center. Another smaller filigree was laid over the sutured muscles to cover the gap, and the superficial fascia and skin were closed over it, a cigarette drain being brought out of the lower angle.

The operation was prolonged, and severe vomiting persisted for several days. When the vomiting ceased it was followed for days by very hard attacks of spasmodic coughing, which must have produced a tremendous increase in intra-abdominal pressure, thus putting the suture and filigree to a severe test. Healing, however, was by first intention, but the horizontal position was insisted on for five weeks. In June an opening large enough to admit the tip of the finger was discovered at the upper angle. This was closed, under local anesthesia, with silver-wire sutures interlacing; and, happily, after this operation there was no vomiting or cough. So far there has been no return, the wall is firm and solid, and the patient is up and about, but still careful, under my advice, about doing hard work.

CASE 2.—Mrs. H., aged 36 years; never pregnant; very stout. The patient was seen for the first time on April 17, 1916, and was operated on the same day in a small but well-appointed hospital in South Dakota. Seven years before that she had both ovaries and tubes removed through a median incision. In this case, also, although healing had been by first intention, a hernia developed shortly after the patient got up. Three years later an attempt at repair failed. On examination the abdomen was found pendulous with a very thick abdominal wall. In the median line were two hernial openings, separated from each other by a bridge of firm tissue, and together extending from the pubic bone to a point above the umbilicus. Together they measured five inches vertically by two inches transversely.

At operation, after cutting away the scar tissue and uniting the peritoneum, the freshened fascial edges were brought together, and sewed with catgut and many loops of No. 27 silver wire. The edges only just approximated without tension, and, therefore, to reinforce this suture line, a Bartlett filigree (5x2.5 inches) was placed over it, and the fat and skin brought together, a cigarette drain being inserted in the lower angle. At this point a fistula persisted for some time, but it eventually healed. Later a sharp sticking pain developed on movement, so that the filigree had to be removed; and with it short pieces of wire came away, which were evidently parts of the suture. About a month ago her physician wrote that a small hernia had recurred at the upper angle.

Reviewing the second case, it seems to me quite evident that the technic, and not the type of operation, was to blame for the poor result. The filigree being planted superficial to the fascia and in contact with the areolar tissue, reliance was placed on the possibility of having it anchor itself in the fat, a very slim possibility, which in this case did not materialize. In some of the reported successful cases the filigree was thus placed superficial to the fascia in the

areolar tissue, and therefore I felt fairly confident that it would anchor itself there, although I appreciated the proneness of the fat to liquefaction. This was a mistake, and I feel now quite sure that, if I had placed it between the fascia and the muscles, it would have anchored itself quite securely and acted as an efficient support, with a resultant permanent cure of the hernia. At any rate the patient is in far better condition now than she was before her operation, and I think a further simple operation will complete the cure.

In conclusion, I wish to emphasize the fact that this method is recommended only for those huge hernias in which the gap cannot be bridged by tissues taken from the vicinity, and which are curable only by some such procedure.

From the study of reported cases the silver-wire filigree insert seems to me, of all the methods devised, the most likely to succeed in these otherwise inoperable cases.

DISCUSSION

DR. CHARLES H. MAYO (Rochester): Concerning the use of silver filigree: Our observations have been that the use of foreign material buried in movable areas of the body is to be avoided as much as possible. It is far less necessary than in the early period of surgery when we were developing methods of cure of these forms of large hernia under discussion. The modern methods of turning fascia and transplanting fascia seem to be very effective.

DR. A. N. COLLINS (Duluth): The essayist has revived a subject which has been discussed periodically for several years. There seems to be a period of about ten years, between 1900 and 1910, when foreign material was used in the repair of these large hernias. This period parallels that in which foreign materials, such as metal bone-plates and screws, silver foil, etc., were used for plastic or reconstructive work; but there seems to be a tendency since the completion of this ten-year period, not only in the repair of bone and other tissues of the body, but in repairs of these large hernias, to get back to absorbable or, in fact, animal autogenetic materials for use in reconstruction.

Most of these large hernias occur in the linea alba. They are rarely strangulated, owing to the large size of the neck of the sac or opening. They are frequently seen in the scar following operations for ovarian tumors or appendicitis; or they may follow injury or abscess in the abdominal wall.

Witzel (1900) first suggested the use, in a crude way, of silver-wire net-work, and Goepel (1900) first made use of the ready-made filigree insertion. Bartlett then (April 22, 1903) devised an improved and more yielding filigree. He reported seven cases at that time in which he had used the device. He observed these cases two years, one year, eleven months, four months, three and one-half months, and eleven days, respectively, and believed at the time they were satisfactory. He advised

burying, but not suturing, the filigree, simply allowing scar tissue to form.

Wiener (1906) reported seven cases in which he had used silver wire in the repair of large hernias; and he quoted Goepel's eleven cases with only two failures (one a hematoma). Wiener used the Bartlett filigree. He observed one case for fifteen months. None have had to be removed. In some cases he advised placing two filigrees in different planes or strata, one above the other. In 1910 he reported twenty-two more cases in which silver wire was used, as well as linen sutures, and discouraged the use of chromic. He recommended linen for first repairs and silver wire for recurrence.

Robb (1907) made a comparative study of the relative values of catgut and silver-wire sutures for closing the fascia after abdominal incisions. He made an analysis of 100 cases using chromic catgut, and the same number of cases using silver wire. Comparing the infections occurring in these cases, 75 per cent of the infections occurred where chromic catgut was used, and 25 per cent occurred where silver wire was used. Since the time of his report the preparation of chromic catgut has been improved; and a like comparison at this date would probably show better results.

Having considered advantages claimed for the silver-wire method, it would be well at this time to consider some of the disadvantages of this material in hernia repairs. Hawkes reported a case, in 1908, before the New York Surgical Society,—a man, aged 44, who developed a large lumbar hernia following nephrectomy eight years before. This hernia had been reduced, and a silver-wire filigree netting inserted. As the result of a fall the filigree broke, and six months later pieces of wire began to extrude. It was finally necessary to remove it entirely. A more flexible wire-filigree netting was then inserted, and this had been worn by the patient for over two years with perfect comfort. Willy Meyer, in the discussion, said that the method should be limited to those cases with a large hernial aperture that could not otherwise be closed. In all of his cases but one, the filigree stayed in place. He thinks they will all stay in place if aseptic healing occurs. If suppuration intervenes he recommends Bier's hyperemia by cupping before resorting to removal of the wire netting.

Dr. Meyer (1903) presented before the New York Surgical Society a woman, aged 53, who was operated on in 1901 for ventral hernia. In the course of the operation some trouble was encountered with the anesthetic, and the wound was hastily closed with silver-wire sutures. The patient was discharged healed. A month later, five of the wire sutures were removed at her home on account of continuous pain. When Dr. Meyer first saw the patient she had a small sinus; and in cutting down on this the remaining sixth wire was removed. Several weeks later he circumcised the granulating wound, and closed the irregular hernial opening with a pad of silver filigree. She made an uneventful recovery, has remained perfectly well, and there were no signs of recurrence of the hernia two years later.

Von Frisch (April, 1912) points out a disadvantage of silver, noting the case of a woman in von Eiselsberg's clinic with symptoms of acute ileus. Eighteen years before that she had an operation for strangulated umbilical hernia, and since then had suffered more or less with her abdomen. On operation extensive adhesions of the omentum and many kinks of the bowel were found, and also numerous filaments of silver wire in the adhesions from the previous operation.

This leads us to a discussion of the more recent methods applied in these large hernial repairs. Henschen, in 1912, repaired a hernia as large as the palm of the hand by the use of a flap taken from the aponeurosis of the external oblique. Over this was placed a flap, six and one-half inches long, taken from the periosteum of the tibia. The result was solid union five months later, at the time of the report.

Mann (1914) used a free transplant of fascia lata to re-enforce a hernia, placing the fascia so that the tension against the repair would act in the direction of the fibers of the fascial transplant. It has been found experimentally that fascia or tendon, if transplanted loose, becomes contracted, and the fascial tissue more or less replaced by ordinary connective tissue; therefore, when the fascia is transplanted, it should be placed on the stretch.

Kahn (1915) encountered a hernia which had recurred twice. In its repair he used a piece of fascia lata. The patient was in good condition at the time of the report, six months later.

It is evident from all of the foregoing that an effort is being made to depart from the silver-wire method and to substitute a more yielding material despite the claims made for the non-absorbable metal.

In the after-treatment of these cases the patients should be coerced, if necessary, into allowing ample time (three to four weeks in the recumbent position) for the process of repair. Reinforcement of the abdominal wall by a well-fitting abdominal binder for several months following operation may be of great service.

DR. SWEETSER (closing): As stated in the paper, there can be no question that the method of choice, in the vast majority of hernias, is autoplasmic repair with absorbable sutures. The use of silver filigree is advocated only in those cases in which the opening is so large as to preclude the possibility of closure except by the insertion of some extraneous substance. My patients had already submitted to several prior operations, each of which had rendered the condition more deplorable, and the problem was to attempt a cure by such means as would not increase the defect, if this operation should be again unsuccessful.

Because large fascial grafts sometimes fail to live, and to obtain them requires the making of a second wound, the preference was given to the use of the filigree; and the result so far has apparently justified the choice.

NEGLECTED SURGERY*

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The aims of those who have thoughtfully chosen medicine as a profession are to prevent preventable diseases, to cure curable diseases, to relieve suffering, and to prolong life. It is the purpose of this paper briefly to consider each of these aims with special reference to neglected surgery.

By neglected surgery we mean the failure to apply surgical treatment or surgical principles when and where they should be applied in order to return the human organism to its greatest possible degree of health after that organism has become injured or diseased, and the only reasonable and accepted treatment is surgical.

To prevent preventable diseases anticipates the term "preventive surgery," and it bears as close relationship to surgery as does preventive medicine to the medical field. However, by preventive surgery we do not mean the application of any means which will render operative surgery unnecessary, but we do mean the proper and intelligent application of surgical principles as soon as they present themselves, instead of procrastinating, as is so often the case, and operating as a last resort after the time for preventing complications has passed. As one physician stated, he had had a large general practice for ten years and during that time had found it necessary to call in surgical assistance in six cases only and then it did not do any good, for all the patients died anyway.

Is it not preventive surgery to remove diseased tonsils early in their existence, instead of waiting for all the known and unknown complications to arise?

Does not this preventive plan work out in dental surgery by correctly treating blind abscesses at the roots of teeth when they are demonstrated through radiography to be present?

Does not the simple operation of circumcision whenever indicated prevent a multitude of ailments, both medical and surgical?

Are we not justified in attacking appendicitis in the first few hours of its acuteness as a preventive of abscess, rupture, and general peritonitis?

These and a hundred other conditions show that there is a field of preventive surgery if the

principles are applied before complications arise or permanent tissue-destruction takes place.

The instances are legion and the conditions innumerable of the surgical cure of curable diseases. How wonderful it often sounds to hear the pleased patient pay his tribute to the surgeon who has restored him to health after years of suffering. Among this class are those who have suffered from gall-stones, renal and vesical calculi, and all other painful surgical conditions to which the human organism is subject. Great is the desire of every surgeon to be able through skill and care to cure all curable surgical diseases, and greater is his remorse, or should be, if he has failed through some neglect of skill on his part.

The third aim, the relief of suffering, is of necessity embodied in the successful outcome of, especially the aim dealing with the curing of curable diseases. There are many instances, however, where surgery is used as a means of relieving suffering without hope of curing the underlying disease. The gastrostomy done in cases of inoperable obstruction of the esophagus, the colostomy for the same condition in the lower bowel, or the draining of ascites or any of the dropsical conditions of the cavities of the body has more of the element of relief to the sufferer than the cure of the vascular or renal disease underlying it.

The last of our aims, the prolongation of life, of course, is closely related to the other aims, for each carried out successfully accomplishes that very end. Gastro-enterostomy for irremovable carcinoma of the stomach not only relieves suffering, but also prolongs life.

Many times we have been surprised to see a patient live in comfort for several years, and finally die of some other condition when we expected to see him die of carcinoma within a few months and did the palliative operation to give him the chance. Other times we have been mistaken in our diagnoses, and subsequently have learned that the obstructive condition proved to be an indurated ulcer, and the simple gastro-enterostomy not only relieved suffering and prolonged life, but practically cured a curable condition. A failure to handle these conditions in this way must necessarily be charged to neglected surgery.

*Read at the 36th annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

Is it not neglected surgery to poultice a peritonsillar abscess, and wait for its spontaneous rupture?

Can we not class under the same caption the condition of a pleural effusion which is left until it becomes purulent, or so completely compresses the lung that the patient is no longer able to breathe? Yet, how many times have we been called to relieve such a case only after every remedy recommended in the *materia medica* had been used to try to absorb the effusion?

Is surgery not neglected in cases of hernia which have repeatedly given trouble and have not been cared for until strangulated?

What is so pitiful to witness as carcinomata which come to the operating-table after metastasis has taken place, when neglect has contributed to the failure of the cases being operated on before?

Many such conditions prove conclusively that we have neglected something.

So let us, with care and skill, attempt more to fully realize the ideal of the aims of our profession, so when each year's invoice of our work is taken we may have fewer and fewer instances of neglected surgery.

DISCUSSION

DR. F. W. FREYBERG, (Aberdeen): The subject of this paper is a good one, and it has been well handled by the doctor. It is very true, as the writer has said, that many of our surgical cases come to us too late. I think the larger per cent of them come as a last resort, when failing health forces

them to do something radical. How much more we could accomplish and how much quicker and better would be the results if we could operate on many of our patients much earlier! I think one of the great mistakes of our general practitioners today is, that they do not recognize many cases as surgical until the patients themselves have about reached this conclusion.

How many cases of malignancy would be avoided, how much more flattering would be the results, and how many more rapid cures with permanent results would occur if we could operate as soon as a surgical diagnosis could be made!

I feel that this paper should awaken the general practitioner to his responsibility, so that many of these patients would be brought to the surgeon for prompt treatment.

DR. J. C. BAKER (Ramona): The import of this paper was brought forcibly to my mind in a case I recall of neglected uterine displacement, pyorrhea, and hemorrhoids. The woman today is past help, the system having been weakened to such an extent that today she is in the last stages of tuberculosis with several complications, any one of which would prevent her living much longer.

In another case I recently took to Dr. Westaby, we opened a periosteal abscess which was not brought to our attention until the sepsis was general. The child died in twenty-four hours.

The fact that impresses me most prominently in the paper is, that, while I am not a surgeon, I see many cases in my practice like this, and, if we could but make these patients realize the importance of early surgical interference or of any early attention, deformities, suffering, and even lives would be spared.

The surgeon is now developing a technic that justifies our reliance on him. It is for us to educate the laity in the importance of early attention in these cases.

ACUTE POST-OPERATIVE OBSTRUCTION AND PARESIS*

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Comparatively few instances of post-operative obstruction are reported in the literature, yet every surgeon knows there are a considerable number of such cases and that a large percentage of the mortality of surgical operations is due to, or at least influenced by, the paresis and obstruction following operations in the abdomen. It is not necessary to look long for the causes which produce this condition. In the normal person the abdominal viscera are protected by the lymph, which bathes the abdominal contents, the omentum, the smooth peritoneum, and the abdominal

wall composed of muscles, fascia, fat, and skin. The clothing is an additional protection to these natural protecting influences against cold and traumatism.

We know that the anesthetic, administered during a long abdominal operation, completely paralyses the large voluntary muscles of the body. We also know that this influence occurs through the nervous mechanism which controls these muscles. If this is true of the large, strong, voluntary muscles of the body, then a still greater and more prolonged paralysis must occur in the delicate musculonervous mechanism of the abdominal viscera. In addition to the influence of the

*Presented before the Tippecanoe County Medical Society, May 6, 1916, Lafayette, Indiana.

anesthetic in any ordinary abdominal operation, the viscera are subjected to the drying and cooling effect of the air and the traumatism incident to packing off the abdomen, as well as the manipulation of the parts, which is necessary during the operative procedure. One often hears or reads of preparation for operation, such as certain kinds of catharsis, a certain amount of fasting, or feeding on sterilized food for the purpose of lessening the amount of gas colic following operations. While such preparation undoubtedly has some bearing, we must realize that, to a large extent, gas colic is primarily a result of paresis of the intestine and not a result of fermentation in the intestine. As long as the normal muscular tone of the intestine is retained, the fermentation that occurs inside its lumen occasions but slight discomfort, because normal peristalsis takes place and the gas is expelled, or moved along in the intestine in the usual manner. As soon as the normal tone of the intestine is interfered with these peristaltic waves are absent, or are, at least, lessened in number and force, and there is over-distention, causing the severe pain which we call gas colic. The colic occurs as a result of Nature's effort to force the gas through the intestine. Just so long as surgical operations are done as they are at the present time, just so long must we expect this distressing post-operative complication.

There is also the actual traumatism to the peritoneal coats of the abdomen due to mechanical violence in operating, such as the separation of adhesions, and the handling of the parts and the raw surfaces due to neoplasms and granulomatous infections. The inflammatory reactions that take place in the presence of all infections must be considered. As a rule, the more virulent the infection, the greater the inflammatory reaction surrounding it, provided the virulence is not so great as absolutely to prevent all reaction: in such an event death occurs before pronounced inflammatory reaction can take place. Up to the present time no method has been discovered to prevent the formation of adhesions. In fact, it is questionable whether in most instances it is advisable to attempt to prevent this reaction, which is Nature's own method of combating infection. What we should attempt to do is to allow these adhesions to form in a manner to prevent mechanical obstruction. Experiments in animals have shown that adhesions in themselves between the intestines do not produce obstruction as long as the intestines lie in their natural

curves or in curves that are the arc of a circle. Nature here, as everywhere, seems to abhor an angle, and it is only when an angle, more or less acute, occurs that there is danger of obstruction.

Various substances introduced into the abdominal cavity to prevent the formation of adhesions have not proved satisfactory, since they have all been more or less irritant and consequently produced inflammatory reaction. For a long time it was believed that oils of various kinds would prevent adhesions. Later experiments have shown that oils do not prevent, but increase, adhesions. The most rational theory in regard to the prevention of adhesions seems to be that of the introduction of sodium citrate in solution. This theory is based on the fact that adhesions occur from the organization of blood-clots. Since sodium citrate prevents the rapid coagulation of blood, it is supposed that when it is introduced into the abdominal cavity it retards the coagulation of the blood until normal peristaltic action returns, and in this way tends to prevent firm adhesions. In all abdominal operations where raw surfaces must be left, they should be covered with tissue or organs that do not easily become obstructed, such as the sigmoid, the large intestine, the stomach, the omentum, or fat-tags. Since most of the obstructions occur from adhesions of the small intestines these should be protected in every possible way from traumatism and from becoming adherent to raw surfaces.

Symptoms of Post-Operative Paresis.—In a case of true paresis of the intestine there is the entire absence of the usual severe, sharp, colicky pains that accompany obstruction. There may be continuous abdominal distress, but even this is often lacking. The abdomen will be distended or not, depending on how far down the intestine the paresis extends. If the paresis involves only the upper portion of the jejunum, the abdomen will be flat with possibly some distension in the epigastrium. The temperature is not elevated since there is no inflammatory process. Vomiting may occur, but it is more likely to be a regurgitation of liquids back into the mouth, and not true projectile vomiting. This is because the stomach itself is involved in the parietic process, and there is dilatation of the organ in addition to paresis of the intestine. In the first stages the pulse is affected but little, but it gradually becomes more rapid with the exhaustion of the patient. No gases pass the bowel. Enemas and cathartics have no effect. If the stomach is

washed it will be found that the same amount of material is obtained at the second washing. If oil is introduced through the stomach-tube after a washing, the oil will be returned at the next washing. This is the type of case in which the best results from pituitrin or some other muscular stimulant may be expected. Occasionally, splendid results may be obtained with eserine or pituitrin. On the other hand, it is often disappointing not to obtain the results expected. When all other results fail, an enterostomy at the lowest point of the distended intestine is often a life-saving measure. The case following is illustrative of this point:

CASE 1 (37121).—A boy, aged 12, was taken with an acute attack of appendicitis in the forenoon. His parents were away for the day, and a physician was not called until they returned at 6 P. M. A diagnosis of acute appendicitis was made, and an operation immediately performed. An unsuccessful search was made for the cecum through a small McBurney incision. This was closed, and a midline incision made. After considerable manipulation and packing off of the intestine it was found that the entire cecum had a very long mesentery and lay on the left side of the abdomen. The appendix, which was reddened but not ruptured, was removed, and the abdomen was closed without drainage. The patient had an apparently normal convalescence the first forty-eight hours. At the end of that time he appeared exhausted; the pulse-rate began to increase; he vomited, and no result was obtained with enemas. The abdomen was flat, except possibly for a little distension in the epigastrium. Routine washing of the stomach every four hours was carried out. After the third day oil was given through the stomach-tube, and at the next washing almost the entire amount was obtained. Condition unchanged. There was no abdominal distension, no complaint of pain, and no temperature, but the pulse-rate increased, and exhaustion increased in spite of salines given by bowel. On the fourth day at 5 P. M. the midline incision was re-opened. The abdominal fluid had not increased, nor was there any evidence of inflammation in the abdomen. The jejunum was enormously distended from its beginning for a distance of about four feet. At this point, and without any evidence of adhesions, the distension ended abruptly, the remainder of the small intestine being entirely collapsed and contracted. An enterostomy was done at the lower point of the distended intestine, and a good-sized rubber catheter introduced into the bowel. Almost no gas escaped through the catheter. During the first night two or three ounces of secretion came through the catheter. The next day this amount increased, and twenty-four hours after the second operation a small amount of gas was passed by the bowel. Vomiting ceased, and convalescence progressed from this time on. I believe this patient would have died if an enterostomy had not been performed.

Acute Post-Operative Obstruction.—Acute obstruction is not likely to occur during the first

two days, because sufficient time has not elapsed for the formation of firm adhesions. Most of the early obstructions occur between the third and the sixth day, when the adhesions have become firmer, peristalsis is re-established, and the factors which produce obstruction are at their height. If an adhesion forms in such a way as to produce a kink in the intestines, the increased peristalsis and distension may produce an increase in the inflammatory reaction so that the obstruction increases rather than decreases. At this time the symptoms are distension, vomiting, and severe rhythmic, colicky pains. It should be remembered that the peristaltic waves in the intestine pass the obstructing point, but the contents of the intestine do not. As a result, as soon as there is enough obstruction to stimulate severe, strong, peristaltic waves, these waves are carried on past the point of obstruction, the intestine below empties itself, and often there is a large, copious bowel movement. In such instances the patient should be watched very carefully. The bowel movement may mislead the inexperienced nurse or physician, and indirectly be the cause of the patient's death. There is nothing more misleading to a surgeon in a case of acute obstruction than to have the nurse and the house physician insist that the patient has had a good, free bowel movement. When this occurs early in the case without a cathartic and the severe colicky pains continue, it should be a warning of true mechanical obstruction and that surgical interference is likely to be necessary. In any case in which mechanical obstruction is suspected, cathartics are absolutely contra-indicated. It is questionable whether pituitrin or other stimulating drugs should be given to any great extent when there is a suspicion of true obstruction, because the increased peristalsis produced by the drugs increases the inflammation and the obstruction. It is much safer to keep the stomach empty with repeated washings, and the lower portion of the bowel empty with repeated enemas. An ice-bag over the abdomen in the early stages may be of benefit in relieving the increased peristalsis. Patients in this condition are more likely to have an increase in temperature than patients with paresis, because there is an associated inflammatory reaction. The temperature is not high, and the pulse is not rapid in the early stages, but they increase. The pain is always rhythmic, colicky, and severe. The more complete the obstruction, the more severe the pain. There is increasing distension. The abdomen is tender, often ex-

tremely sensitive to the touch. Vomiting persists in spite of repeated lavage.

The question always arises in these cases, when to re-operate. If the obstruction occurs within the first three or four days the wound may often be re-opened with a local anesthetic or none at all, and the constricting band located and separated with very little manipulation. If the patient is not in good condition extensive manipulation inside the abdomen should not be attempted. It should be remembered that the obstruction is the point to be combated; and, if it can be relieved, the cause may be removed later when the patient is in a better condition. At this time enterostomy is of the greatest value. It is not necessary that the enterostomy should be immediately above the obstruction, but, if it is done at any point above, the condition will probably be relieved. It should be understood, of course, that the nearer it can be done to the obstruction, the better. The following case illustrates the value of this operation:

CASE 2 (155350D).—A large, fleshy man, aged 55, had a cholecystectomy for an acute, gangrenous cholecystitis with stones. On account of the amount of infection, and the difficulty of the operation because of his obesity, no general abdominal exploration was done. Convalescence was satisfactory for the first forty-eight

hours. When the patient was seen on the morning of the third day the house physician reported that he had severe, colicky pain throughout the night, severe enough to cause him to scream. He had not vomited, but his abdomen was enormously distended. No results had been obtained with enemas. Oil had already been administered, or its use would have been prevented. It was decided to try pituitrin and enemas, and carefully watch the patient. Some results were obtained from the enemas, but the distension and the severe colicky pain continued. The stomach was washed, but very little material was obtained at any washing. At four o'clock in the afternoon it was decided to re-operate. Because of the infection present it was thought best not to re-open the former incision, and because of the patient's size a small right McBurney incision was made with local anesthetic. A distended loop of the small intestine presented itself in the wound. Examination through the small incision did not reveal any collapsed intestine. The distended loop was fairly low down on the ileum, and an enterostomy was performed with a good sized catheter. Drainage from this distended loop commenced at once. A large rectal tube was inserted, and allowed to remain. The patient's pain was relieved almost immediately. He passed a very comfortable night. Drainage continued through the enterostomy tube, and the following morning the distension had subsided to a marked degree. From this time on convalescence was normal. After forty-eight hours a natural bowel movement occurred. The enterostomy wound closed spontaneously, and no further operation was necessary to relieve the obstruction.

THE COMEDY OF MEDICAL AND SURGICAL NOMENCLATURE*

By F. W. MacMANUS, M. D.
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In all probability, a great majority of medical men never take a thought of the comedy lying hidden in medical and surgical terms; or, if they do, they may think it too light a vein for serious consideration. In vindication of a national characteristic, whatever others may think, we hold a different opinion.

Those who work hard,—and conscientious work is always hard,—and employ their leisure time in arduous reading, must have dull lives. That is, it would be a dull life for those of us of a different turn of mind.

Some work and some play

Make a far better day.

If a physician can extract a moiety of amusement from an analysis of the words used in his reading, he has gained a twofold object: He

gains and more completely fixes knowledge, making of the arduous a simple pleasure by reducing a sharp acclivity to an easy incline.

For an easy beginning, let us take the word *anemia*. This is composed of two parts, and is written in two ways: "anemia" and "anæmia." In either case, the words are wrongly used, as we shall see. The prefix *an* means *without*, *not*, *not having*. The Greek root, "haima," means blood, as you all know, and the two parts taken together mean *without blood*, *not blood*, *not having blood*.

An analysis of the other form of spelling the word discloses the fact that a Latin prefix has been welded to a Greek noun by fusing the terminal vowel of the prefix to the initial vowel of the root. If not used as a Latin prefix, then, it must be used as a Greek distributive preposition meaning *of each*, the same word we use in prescription writing. When used as a noun, it means

*Oration in Medicine presented before the North Dakota State Medical Association, Thirtieth Annual Meeting, May 9 and 10, 1917.

opposed to, but, obviously, we cannot accept this meaning. So, sifting out the different meanings according to the different formations of the word, we have, "no blood," "not blood," "not having blood," and "a collection of blood."

What would the modern lexicographer have us understand? It was probably all right in the olden times to name diseases according to the appearance of the patients as presented to the unaided eye, because, in those days, instruments of precision were, as the French would put it, *briller par nous absence*. But conditions and knowledge have changed. Now, we know the pathology, and why should we cling to the old when we have a prefix which more nearly defines the conditions? Yea, we have two of them,—the Latin "spana" and the Greek "spanos," each meaning a decrease, a reduction in amount (rare). Therefore, why not adopt the more definitive term, *spanemia*?

Mr. George W. Stiles, in his paper on "The Use and Abuse of Zoölogical Names by Physicians," says that "The hydatid (echinococcus), is suffering with no less than sixty names. The common tapeworm (tenia saginata) has about forty names."

Dr. A. Rose, in an article published in the *New York Medical Journal* of May 29, 1899, cites some examples "to demonstrate some of the nonsense existing in our nomenclature," saying "it is not my fault if some comical elements intervene." We have, first of all, "policlinic" and "polyclinic," one with an "i," the other with a "y." These different ways of spelling the word have caused a great deal of dispute. It has gone so far that one of the disputants has called the other "stultus," although both were classical scholars, and, after all, both were in the wrong, as the word is neither "p-o-l-i-c-l-i-n-i-c" nor "p-o-l-y-c-l-i-n-i-c," but "astyclinic," pertaining to a city.

Of course, Dr. Rose knows all about this word, but he is wrong, for the word depends entirely upon whether or not the many clinics are held in a city or out in the country, as Rochester.

He says it is a most egregious error to call the cardiac orifice of the stomach, "the cardia," and exceedingly painful to hear gastric pains called "cardialgia," being almost equal to the Irishman who had "bronchitis of the liver."

Writing again, in 1905, on "Some Examples of Corrupt Medical Nomenclature," he cites, among other words, "anopheles," which means a *good-for-nothing fellow*, harmful, etc. He says it is

certainly unscientific to call a certain species of mosquito by this name; and we hold a like opinion, for Bill Nye made the astounding discovery that the Almighty had invented ague for the express purpose of furnishing involuntary exercise to the people of the South, and Dr. Carroll discovered the fact that the impetus to said well-known exercise comes through the medium of the stomach of the female anopheles.

J. P. Simonds, in a recent article on "Gas Bacillus Infection," refers to the astonishing number of names that have been assigned to this organism by various investigators. He says that, first described by Achalmé, briefly and inadequately, in 1891, it was called by him, "The Bacillus of Acute Articular Rheumatism." Welsh and Nuttall, in 1892, gave the first satisfactory description of this bacillus under the name, "Bacillus Aërogenus Capsulatus." Frankel, in 1893, isolated the same organism from gas phlegmon, and called it "Bacillus Phlegmonis Emphysematis." Klein, in 1895, found this bacillus in the stools of patients suffering from diarrhea, and designated it "Bacillus Enteritidis Sporogenes." In 1898, Veillon and Zuber isolated it from several cases of appendicitis, and named it "Bacillus Perringens." In 1900, Schottenfroh and Gräberger gave to an identical organism which they found in the market milk of Vienna, the sesquipedalian title of "Granulo-Bacillus Saccharobutyricus Immobilis Liquefaciens," and Simonds observes that, if the poor thing survives this last massed attack, it may probably receive other distinguishing titles.

How often we have heard medical men say that a certain patient is in an "atonic" condition, by which he means to say that the patient is in a weakened state. But what we understand by the term and what the term really means, are widely divergent. "Adynamia" is a better term because it means *motor insufficiency*.

Oöphoron or *ovipare* means an animal which propagates its young through or by means of ova or eggs. As regards the medical use of the term, it pertains to a woman. When the medical man says "oöphorectomy," he means the removal of an ovary, while the formation of the word conveys no such meaning. "Oöphorectomy" means, strictly, the cutting away of an oöphoron or woman. That is to say, the woman is cut out. Evidently we are making use of the wrong word.

Oötheke is the Greek word for egg-store or depot. The correct form would, therefore, be *oöthesectomy*,—the removal of the egg-store or

depot, case, crate, etc. When an ovary becomes excited, inflamed, or congested, the pathological process is largely limited to the ovary, and does not extend to the oöphoron, the woman. This condition is correctly described by the word *oöthecitis*.

Opto is another Greek word, and means to broil or roast. *Metron* means a measure. "Optometry," therefore, means the science of measuring the degree of broiling or roasting. The real word pertaining to vision is "optikos," and any term denoting a species of human animals who pretend to know something of measuring the optical defects should be built around or upon "optikos." "Optikometry" is correctly formed and has an exact definitive meaning.

"Polypus" is taken from the Greek *polús*, meaning *many*, and *poús*, a foot—many feet. Did any one ever see a "polyp" with more than one foot or pedicle? Perhaps the word *polypous* could be correctly applied to a man in a state of extreme inebriation, just before he seeks the twin sister of death—sleep, and following that stage wherein he may wish to kiss the bartender.

Dr. Casey A. Wood cites several instances of the improper use in medical literature of certain words and phrases, such as "turbinate" for "turbinal"; to "operate" a cataract instead of saying to operate upon an eye for the removal of a cataract.

Psychosis means an animation or infatuation, and may be applicable to any mental state or condition. We have come to understand by the term "psychosis" any undue excitation or aberration. Dr. Wood suggests that we adopt the word "phrenitis" to be used instead of "psychosis." Strictly speaking, "phrenitis" means an inflammation of the mind. Is it difficult to understand why we cannot accept this word, even in the medical profession?

Refraction is another word very much abused because of a general misunderstanding of its real meaning. This is derived from the Latin *re*, a prefix meaning again, repeat, backward, etc. *Fractus* is taken from the Latin *fringere* or the French *frangere*, both of them meaning to bend, break, or deflect. When we say we "refract an eye," we bend, break, or deflect it backward, perhaps repeatedly. So the refractionist does not mean exactly what he says, as the owner of the eye may offer serious objection to such a line of treatment.

Gonia means an angle. An angle is the space between two meeting straight lines. *Goncitis* is a

term we use when we wish to convey the idea of inflammation of the knee-joint. In reality, *goncitis* in an inflammation of the space between the leg and thigh when the former is in a flexed position, and at no other time, as, when the whole limb is straight, there is no angle. This word will no doubt be taken up by our unscientific friends as soon as they discover that real pain may be relegated to space, in this particular, with the sanction of the entire medical fraternity.

Dr. Winslow Anderson, in an article on "*Eponymics*," says that "diseases should have an anatomicopathological nosology, and not an eponymous nomenclature." He cites as an instance of an "idiopathic idiosyncrasy" of some medical writers, the term "Bright's disease," which he says, today has more than fifty pseudonyms and synonyms, covering nearly all the diseases of the kidney, and no living man and no dictionary extant can inform us just what "Bright's disease" is. Along the same line may be mentioned "Banti's disease" and "Gull and Sutton's disease." We may think we know what these diseases are, but, ask yourself the question, What are they? What pathological conditions do these names conjure up in your mind, or, in other words, how is it possible to remember your pathology by "eponymous" nomenclature? Every disease should have an anatomicopathological nosology, as Dr. Anderson has so well said, in order to understand somewhat from the name something of the conditions to which it is applied.

How many of us, after all these years of reading, practice, and experience, would understand the pathological significance of such terms as "Parry's disease," "Begbie's disease," "Parson's disease," "Beigel's disease," "Bergeron's disease," "Mracek's disease," "Flajani's disease," when eponymics are used as pseudonyms for such conditions as "exophthalmic bronchocele," "exophthalmic goiter," "rhythmic muscular movements," "cardiac palpitation," "bradycardia," or "tachycardia"? Would you recognize "Dressler's disease" or "Harvey's disease" as paroxysmal, periodic, intermittent hemoglobinuria? Does "Cruveilhier's disease," "Aran-Duchenne's disease," "Cruveilhier's atrophy," "Cruveilhier's palsy," or "Duchenne's disease" convey any idea of gastric ulcer, progressive muscular atrophy, pseudohypertrophic paralysis, or posterior spinal sclerosis?

If all the floods of secretions from the eponymous glands could be collected into one great reservoir,—sudoriparous, odoriferous, and oth-

ers,—it would be sufficient to drown Pharaoh's host and all the hosts that have followed, down through the long list from Meibomius to Bartholin whose opsonic index for drowning should, in the nature of things, be exceeding high.

There are eponymous membranes sufficient to hang every one of the malefactors who gave them names. In such a case, and it should come to pass, we should see dangling from such well-deserved positions all the well-meaning culprits from Schwann to Hymen, and it were needless to say where most of them would find a hang-out.

If all the eponymous valves could be utilized as locks and flood-gates, the great waterways of the Union could be held under perfect control, very much to the embarrassment of certain Congressmen of swinish proclivities.

Geological terms pale into insignificance when confronted by the eponymic mountains, pyramids, islands, eminences, tuberosities, isthmuses, caves, cavities, ventricles, antra, crypts, recesses, fis-

tures, joints, points, angles, triangles, fosses, foramina, notches, demilunes, tracts, spaces, centers, margins, labyrinths, decussations, gyri, diverticula, lines, sulci, commissures, zones, sinuses, etc.

We are reasonably sure that enough glue could be extracted from the cartilages, horns, hoofs, and bones of our eponymous nomenclature to hold together all the parcels-post packages, building committees, and Methodist Ladies' Aids from now to kingdomcome.

Even the contemplation of the vast array of bacteria, bacilli, spirilla, protozoa, and spirochetæ in their eponymic trappings is an onerous task. There are altogether too many eponyms, synonyms, and pseudonyms for my nosological digestion. I greatly fear that I should be driven to the Falstaffian evil before the act could be accomplished. I am also quite sure that those who are seeking an Euthanasia would not choose this as an ideal manner, but would soon reach that state wherein they would pray for an applied dose of Oslerism, instead.

IF YOUR SON IS TO BECOME A SPECIALIST IN THE PRACTICE OF MEDICINE, HOW SHALL HE SECURE HIS TRAINING?

By FRANK C. TODD, M. D.

MINNEAPOLIS

If you have a son, and he wishes to become a doctor of medicine and a specialist in one of the branches of medicine, a surgeon for instance, you surely want him to be a good surgeon, a credit to the profession, and you do not want him to get his training at the expense of his patients, first, because the function of a physician is to save lives and not to destroy, and, secondly, because there is a quicker, and a better, and more humane way.

You first put him through a high-grade medical school, which now includes, or is followed by, a year's internship in a good general hospital. If this hospital is a part of the medical school and under its complete control and supervision, the work he does and the studies he pursues during his internship will give him a valuable foundation, and will be superior to several years of general practice. If, however, his internship consists merely in the performance of routine duties with no supervision as to the character of work done,—namely, if the interne is

used only as a convenience and a cheap assistant for the hospital,—his year of graduate work will be of doubtful value.

You may think now that your son should enter general practice; and it cannot be denied that the hard knocks he may get in practice will teach him some things. Being thrown on his own resources, certainly, should give him an opportunity to develop his own initiative and to find out something about his capacity. It may help to give him self-confidence; it is to be hoped it may not give him too much.

But as to whether or not it is best for him to enter general practice or to *learn those things he would learn in general practice by the course he is to pursue in the process of his training*, is a question we shall not discuss at length. There is much to be said on both sides. We are firmly of the opinion that, in the training of an ophthalmologist, it is better to continue the training for his specialty than to undertake general practice and spend much time in work upon irrele-

vant things. We believe this is true to a great extent respecting all the specialties.

In any case we know from our experience in teaching that we prefer to train a young man who has not been at all, or long, in general practice. He is more plastic, his ideas are not fixed, and he can develop mentally and technically more rapidly. He does not have to unlearn some of the things concerning which he is misinformed. If he has been long in practice "he knows much that isn't so," as one very wise surgeon teacher put it.

But, now, let us suppose he is ready to begin upon his training for his chosen specialty, which, in this case, is surgery. What shall he do? Shall he take the short lecture and clinical courses given in the various postgraduate medical schools? Not if he wishes to become a good surgeon. They are offered only for the purpose of "brushing up," and to learn some of the things about some of the specialties in which the practitioner finds he is weak. Unfortunately, they are used very often, and usually, as the only means by which the future specialist gets his information except through his experience upon the unsuspecting and unfortunate patients who trust him and believe in his skill because he has announced himself a "specialist." Such specialists have been well dubbed "six-weeks specialists." The certificate or diploma which it has been the custom for these institutions to give but adds to the deception. Very many of our so-called specialists have secured their training in this way.

Or shall he go to Europe; not now, certainly, but in times of peace? In some of the clinics of Europe before the war he could learn much, but not as much as the public suppose. To have "studied in Vienna" has meant much to the public. Little is known as to whether the "student" spent two weeks or two years in Vienna and as to whether he studied medicine or billiards. All who have been there know that it is wholly up to the student whether he does serious or slipshod work; for he is holden to no one, and there are no requirements or obligations except his own conscience and desires. In any event, such courses do not make surgeons or even skilled operators. They aid somewhat, but our experience with not a few assistants who have seriously studied in such foreign clinics has shown us that

they are not well trained in their specialty when they have finished. They do not know how to take care of an operative case from start to finish, and they finally learn how only under the tutelage of, and by assisting, an experienced surgeon, or by long and bitter experience upon their own patients.

From this recital it is evident that the most serious problem in medical education today is the one of training and educating specialists in medicine.

Problems of undergraduate instruction still need study, and there is much chance for improvement, but in recent years many advances have taken place, and undergraduate instruction in medical schools in America is now carried on in a way which gives good results.

The training of specialists in medicine is, then, a proper function and indeed an obligation of our higher-grade medical schools. Facilities at the disposal and under the control of medical schools are as yet insufficient. Laboratory facilities and teachers are already provided in such institutions.

To provide such needed facilities, new and more hospitals must be built and opportunities for close affiliation with high-grade institutions must be taken advantage of.

But to get back to your son who is anxious to secure his proper training to become a good surgeon: What would be your choice? You would choose, and wisely, to put him under the tutelage, and to act as an assistant for a sufficiently long period (three years at least), of a skilled and wise surgeon possessed of the power to impart his ideas. But, better still, you would wish to secure for him such an opportunity to work with and assist a group of skilled surgeons allied with others proficient in their related specialties and provided with facilities which enable them to give your son the proper learning in the subjects he must study. In addition, he should, to properly round out his education, undertake work in anatomy, pathology, and other laboratory studies under the supervision of experts who will not alone teach him the things he wishes to know, but will inspire him with the ambition and desire to do good work and to produce.

It is with these thoughts in view that the University of Minnesota Medical School and the Mayo Foundation is endeavoring to provide opportunities and such courses of instruction as are herein suggested.

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*This list was furnished The Journal-Lancet by Dr. (Major) J. F. Corbett, President of the State Board. A few men have been examined at other offices of the Board, and we shall endeavor to publish their names, together with the names of men from North and South Dakota, in our next issue. We earnestly solicit corrections in the above list for publication at that time.

The following list is furnished us by the Mayo Clinic. Six of the names in this list appear also in the list above. A list of forty or fifty men who were examined at Fort Snelling is not available at present.

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THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

AUGUST 15, 1917

EXAMINATION OF RECRUITS FOR ARMY SERVICE

The Government has met an unexpected obstacle in the examination of medical men as members of the Reserve Corps, and this obstacle concerns the health of the individuals of the Corps. It has demonstrated what may happen among private recruits, because the doctor is an individual who has his physiological or anatomical failings, and, although he is willing to perform the duties of an examining officer, he is thrown into such a line of work, together with his home worries and responsibilities, that he occasionally fails to stand up under the test. The examining surgeon is then subject to the same liabilities, and he should be subject to the same exemptions, that apply to others. For instance, here is a man who some years ago had a nervous breakdown. He makes an apparent recovery and his recovery perhaps covers a period of ten years, when suddenly he is notified of a commission given him by the Government. That commission carries with it the examining of other physicians or surgeons, and his emotional side is appealed to so strongly that he sometimes wavers in his opinions. When the call comes for him to report for

active service at the Government post, no investigation is made of the days prior to his demand for activity.

If the Government would stop for a moment and inquire of the new officer whether he had been overworked, had had unusual responsibilities thrust upon him, whether he had exerted himself to the utmost to clear up a lot of personal and family details and had been without sleep for several nights, perhaps he would not show his weak side. Seemingly, however, the Government pays but little attention to him as an individual. He is looked on as a part of the machinery, and his condition or his wishes perhaps are not consulted. The further result is that he is put upon night duty on his arrival at his place of work with the inevitable result of a sudden nervous collapse. Another man who has been a commissioned officer for three or four months suffers from the excitement, the responsibility, and the work to which he has been assigned; and in making his effort to clean up his business and personal affairs he is subjected to an enormous strain, perhaps an injury which is the precipitating cause of his collapse. He arrives at his post practically incapacitated physically and mentally. There the condition is so evident that the officer in charge of the training-camp suggests that he take a ten-day leave, not because he is physically incapacitated, but because of "extraordinary circumstances." These extraordinary circumstances send him home disappointed, chagrined, and uncertain as to his future. He is ill. He perhaps is subjected to a surgical operation, and sent out with the expectation that his troubles are at an end and that a few days will put him on his feet, but the jar of his injury, the shock of his operation, and the conditions which surround his endeavor to carry on his work are too much for him, and he collapses under the same sort of unexpected strain. This is an illustration of two men only who have been willing, ready, and seemingly able to serve their country, but who have dropped out because of their inability to maintain their equilibrium and their judgment.

It is quite evident that mistakes will occur in the examination of all recruits, whether they may be medical officers, officers of whatever type, or whether they belong to the class who are to become privates. Then, too, in a country like the United States, which has not yet appreciated the seriousness of the war problem, there is a great deal of indifference, and many apply for exemp-

tion on more or less reasonable grounds. Many are exempted because they have minor illnesses or minor defects or do not come up in other ways to the standards required by the Government. England started out with the determined idea to admit only perfectly well and strong men who were without defects of any kind. They found, however, that this was not practical, and they were obliged to modify some of the standards and to admit those who are really physically fit in spite of their apparent defects, and particularly in spite of their demands for exemption. In the State of Minnesota, where we are in closer touch with the conditions than elsewhere, this is apparently a decided handicap to the Government, that is, this system of examination and exemption; and the time is coming when the Government will pay less attention to conditions which are not serious, and also will pay less attention to the demands for exemption. Apparently, this is the only way in which an army of sufficient size and sufficient stability can be raised.

One of the gravest questions which the Government will meet is the mental and nervous constitution of the individual. THE JOURNAL-LANCET has referred to this before, but it may be safely emphasized again so that this question will be considered more carefully, and, further, in order that men may not be admitted to the service who are nervously or mentally of the class who should be disqualified.

Major General William G. Gorgas says in one of his official bulletins that when a recruit has once passed his examination, which will be rigid, he may rest assured that the Government will put him into as nearly an ideal sanitary environment as is found anywhere, either in military or civil life.

The Government's standard is a high standard, and it is hoped that it may be maintained with the exception that the representative men who are the advisors of the chief of the medical department of the army may consider that the disqualification of men depends upon many circumstances. Some very good men who are not perfect may be used in various capacities; others who are specialists in their line, even though they are candidates for exemption and are not physically perfect, may do a vast amount of good work. Dr. Pearce Bailey, famous as a neurologist and psychiatrist, is in charge of a department that considers this phase of medical service at the front, and he has said many times that mental irregularities are among the most com-

mon troubles to be dealt with in modern armies, and that in Europe hospitals specialize in this particular. Formerly and in other wars men who were subject to enormous and tense strain and broke down, were looked upon as quitters, cowards, or malingerers, and were treated heroically in the guard-house. In the present war, however, this phase of the conflict has changed very materially, and many of these men who are temporarily down and out are recognized as sufferers from shell-shock and the enormous demands upon their nervous systems, and they either tire or collapse, and are not in any sense cowards or quitters.

Proper medical attention given early restores them to a normal balance, and they are able to go back to their work not only rested but with renewed energy and with a nervous system which is better adapted to the work before them. It is well to spread the information, through the medical profession, to the families of the recruits that the soldiers will be given the best of care, and as soon as the organization is in proper working order no one need feel that the soldiers or officers are going to be neglected or maltreated in any way. Of course, it pays the Government to keep its men sound in mind and body—that is simply an economic proposition. Consequently the extreme watchfulness which the medical men in various camps keep over their charges will be a saving to the Government, both of men and also in the freedom from illnesses which can easily be avoided by caution and observation.

Vice and liquor cannot be kept out of an army entirely except by Government protection, and the supervision of the camp and its surroundings by the medical officer who is in charge. If a soldier is free from venereal disease and is kept away from temptation in drinking, he is practically safe as a fighting unit. Then, too, the fight against germs which develop into preventable and communicable diseases will be as rigid as possible. Prophylactic inoculations have done much to save the armies of Europe, and, as now carried out in various camps of the United States, will probably lessen the advent of many preventable disorders.

PAPERS AND DISCUSSIONS BEFORE MEDICAL SOCIETIES

An editorial in the *New York Medical Journal* of August 4, 1917, suggests that too many medical societies exist at the present time. There are too many societies that get together for purely

social purposes, and the paper that is presented before such a meeting is of the unnecessary type. Too many papers are verbose and have very few ideas, either original or copied. The result is that the medical society becomes a joke, and unless the scientific interest is kept up as it should be the organization decays. In order to keep it going, new recruits are added, and they are much of the same type as the originators of the so-called special society. They have the same ideas to present that were presented twenty years before. They have these ideas simply because of their inexperience, or because their minds are attracted only to commonplace subjects; and the weary auditor listens and wonders why some life is not injected into the new organization.

Many of the papers presented at many of the medical societies might better be omitted, and it is a fortunate circumstance where the author of a paper who makes up a long program is forced by illness or business to remain away. His paper may be good, but the chances are that it is very ordinary, that it does not convey a new idea, nor does it promote discussion, and, if it does, the discussion is even more useless than the paper. How many of us have sat in medical meetings listening to papers that were badly composed, which treated upon subjects of interest only to the writer, and then hear from one to five men get up and discuss this unnecessary topic. Very rarely does the discussion follow the idea of the paper. Again, it is the individual man talking about the things he would like to talk about, whether they are of interest to others or not. He overlooks the boredom of his discussion. He forgets the weariness of his audience, and he tramples on all good form in discussion, whether his language be constructive or destructive.

There are a great many men who like to talk in medical societies, and some of them like to talk more than once; but what good does it do except to the speaker? He continually reiterates his viewpoint, and the man who discusses his paper goes through the same process of unreason. He lacks coherence in thought; he perhaps knows but little, if anything, about the subject he is trying to discuss, and yet he goes on and on. No wonder medical societies degenerate. Then, too, there is the man who is vehement, almost violent, in the presentation of his views, and he resents any criticism or opposition either to his paper or his discussion.

The character of the paper, the character of the discussion, and its length depend upon the pre-

siding officer in the society. If he be a good-natured soul he lets the discussion develop into drivel. He does not call down the speaker for keeping away from the subject. The result is that there is a rambling, unconnected, uninformative, personal form of debate going on without any restriction. Perhaps back of this is the committee on program who should be more consistent and who should endeavor to secure papers and discussions of some value.

This arraignment of the medical profession is perhaps caustic and severe, but the writer well remembers the time when he began to discuss things in medical societies and he has a very distinct recollection that his efforts were commonly incoherent, unsound, and misleading. He realized after he sat down that he had forgotten the subject under discussion, and he realized more and more that he had made an ass of himself on several occasions. Consequently this editorial should not be taken too seriously by any man, nor should it discourage other men from speaking at medical meetings. They must practice on someone, and the poor audience is the one chosen for such mental acrobats.

The writer confesses, further, that the medical societies of today are very different from what they were twenty years ago, for the reason that there are better men who form the societies, that better men are chosen as presiding officers, and men who have something to say and are better qualified to speak than the men of olden times.

The Minnesota State Medical Association meets in St. Paul on October 10 to 12, but this editorial has no suggestion to offer, nor does it aim to reflect upon the meeting and the program, for we know that the program committee will do the best it can without hurting the feelings of too many of the would-be participants; but, if we could realize a little more keenly the necessity for short papers and concise discussions, based upon the subject matter presented, there would be more medical men in attendance.

MEDICAL SERVICE IN THE ARMY

It is now perfectly apparent that the medical men of the country are not aroused to the demand upon them by conditions either present or soon to become present. America is planning to raise an army of 2,000,000 men that she may do her part in the world war, and do it so well that human life, as well as democracy, will be saved. The Government proposes to make the lives of its soldiers safe while in camp by preventing all

preventable sickness, and to save all wounded men whom medical science can save.

For Minnesota's quota of medical men for an army of the size above named there must be 400 men on active duty, and this requires 600 commissioned and classified. The number volunteered to date is approximately 300, or only one-half the number required.

These figures are reliable, being practically official estimates; and they tell their own story. The best men in the profession are needed, and already many of the best men in Minnesota have joined the service, as shown by the names in the incomplete list published on another page of this issue.

We do not believe that medical men all over the country are hesitating because of the large sacrifices demanded of them; rather, in our opinion, they have failed to meet the demand because they cannot see the need of their services *at present*. If a clear call came today for twice as many physicians to do work at ten times the sacrifice and ten times the risk, the call would be answered. The call upon the profession today is obscured by a lack of definite information as to the needs; but those who know best want the profession to meet the demands now made by the Government, and they manifest their willingness to do this humane work which no other class of men can do.

The risk of life is unquestionably small, and the pay is by no means insignificant. In the three years of the war the Allies lost in killed only two per cent of the physicians in service, and five per cent in casualties. The pay is as follows: \$2,000 for first lieutenants, \$2,400 for captains, and \$3,000 for majors. Very few captain and major commissions have been conferred. It is the intention to recognize merit in granting such commissions, and every man who joins the Medical Reserve Corps may count upon fair treatment in this respect.

Physicians who apply to the central office (on the University Campus) will receive immediate attention from Dr. Corbett or, in his absence, by Dr. Northington, his associate.

AN INCIDENT ILLUSTRATING THE IMPORTANCE OF BIRTH-REGISTRATION

An incident which took place in Duluth the other day furnished a striking reminder of the importance, to the country and to the individual, of the proper registration of births. The Director of Public Health was called upon by a police

officer with a young man in custody who had been arrested as a slacker under the military service registration law. The prisoner claimed that he had been born on January 10, 1897, and therefore was not twenty-one years old on June 5, 1917. The police officer refused to believe him, but had the intelligence to take his charge to the local registrar's office and search the birth-records. The young man's claim was substantiated. If the doctor who attended this birth had failed to comply with the law, and had not reported it, the prisoner would have had to stand trial and even then might have been unable to prove his age.

Never in this country's history have vital statistics been so important, and cases like the one cited are only the first step in the service they are to render in answering questions of age and relationship that will arise, in multiplied frequency and complexity as the American goes deeper into the war.

MISCELLANY

NOTICE TO THE PHYSICIANS OF NORTH DAKOTA

I wish to call the attention of the profession in North Dakota to the necessity of having their licenses on file. Section 12, Medical Practice Act of North Dakota, approved February 27, 1911, states that you must have your license recorded in the office of the Recorder of Deeds of the county in which you maintain an office for the practice of medicine.

In a recent communication from the office of the Attorney-General I was asked "to ascertain whether the law is being complied with in that respect."

Kindly attend to the recording of your license; also, if you have any doubts as to any person practicing in your community without a license, you can ascertain the fact by writing your Recorder of Deeds. If such practitioner's license is not recorded, it is *prima facie* evidence that he does not possess one.

Also notify this office if you know any person practicing medicine within this state without a license.

G. M. WILLIAMSON, M. D.,
Secretary

State Board Medical Examiners.

Aug. 1, 1917.

BOOK NOTICES

VACCINE THERAPY IN GENERAL PRACTICE. By G. H. Sherman, M. D., Third Edition. G. H. Sherman: Detroit, Mich., 1916.

In the third edition of *Vaccine Therapy in General Practice*, Dr. G. H. Sherman has gone into the vaccine question about as thoroughly as is possible. He has missed but few diseases that have been treated by vaccines, either by himself or others. He tells of his own experience, as well as the experience of other men, of the good done by vaccines, and of the many cures and benefits therefrom, but the reports of cases not benefited or cured are conspicuous by their absence.

We all agree that vaccines do considerable good, but their field is limited, and one reading this book is liable to become over-enthusiastic and be doomed to disappointment. As a manufacturer and seller of stock vaccines Dr. Sherman is very enthusiastic; nevertheless the book is well worth reading, is nicely gotten up, and contains some very valuable information on vaccine subject.

—LITCHFIELD.

PRACTICAL TREATMENT, Volume IV. By 76 eminent specialists. Edited by John H. Musser, Jr., M. D., Associate in Medicine, University of Pennsylvania; and Thomas C. Kelly, M. D., Instructor in University of Pennsylvania. Desk index to the complete set of four volumes sent with this volume. Octavo 1,000 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, \$7.00 net; half morocco, \$8.50 net.

The new Volume IV of Musser & Kelly's *Treatment* while called a supplementary volume to their excellent work, is essentially a complete one-volume work on all the newest therapeutics. Dismissing *Etiology*, *Pathology*, *Diagnosis* and *Symptomatology*, except where there is something new in these divisions, but including many of the newer clinical and laboratory methods of diagnosis, the volume is replete with points of the greatest value to the physician.

Such complete articles by leading internists, as Goldthwait on "Postural Treatment of the Abdominal and Thoracic Visceral Disturbances," Rowntree on the "Nephritides," Cole and Chickering on "Typhoid Fever," Janeway on "Diabetes," Sippy on "Gastric and Duodenal Ulcer," and especially Smith and Barrett on "Peridental Suppurations," an important subject, untouched in other works in practice, and many others make up a collection of monographs on "The Newest Treatment," which must be read with pleasure and profit by every practitioner.

—LELAND.

REPORT FROM THE PATHOLOGICAL DEPARTMENT AND THE DEPARTMENT OF CLINICAL PSYCHIATRY. Central Indiana Hospital for the Insane. Vol. vi. Forty Wayne Printing Company, Fort Wayne, Ind., 1916.

This report for 1913 to 1915 covering 670 pages contains, besides the usual statistical sections and numerous autopsy records, the following papers by Drs. Max A. Bahr and Frederick C. Potter: "The Insane Diathesis, Report of Cases," "Ziehen's Con-

ception of Hallucinatory Paranoia (Amentia)," "A Case of Juvenile General Paresis," "Pathological Report of a Case of Juvenile General Paresis," "The Genesis of Certain Phenomena as Interpreted in a Psycho-analytical Study of a Case of Paranoid Dementia Precox and a Case of Hysteria," "Presentation of a Case of Hysteria from the Viewpoint of the Freudian Psychology," "Report of a Case of Pemphigus in a Paretic," "Etiology and Pathology of Paresis," "The Colloidal Gold Test in Psychiatric Cases," and "A Report of Three Cases of Cerebral Embolism."

In his paper on "The Insane Diathesis, Report of Three Cases," Dr. Bahr emphasizes again the importance of the early recognition of those types of individuals whose mental make-up predisposes them to psychic disturbances, and he indicates the responsibilities of the physician in this field. Those interested in the Freudian doctrines will find the paper by the same author on "The Genesis of Certain Phenomena as Interpreted in a Psycho-analytical Study of a Case of Paranoid Dementia Precox and a Case of Hysteria," both instructive and interesting. In the discussion of the organic psychoses appears a concise, excellent, and readable presentation of the aphasias and concept disturbances.

—WOLTMANN.

BLOOD-PRESSURE FROM THE CLINICAL STANDPOINT. By Francis Ashley Faught, M. D. Formerly Director of the Laboratory of Clinical Medicine at the Medico-Chirurgical College, Philadelphia. Second edition, thoroughly revised. Octavo of 478 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1916. Price \$3.25 net.

The sphygmomanometer as an instrument of precision has been adopted by the medical profession with the greatest avidity. Such a wealth of material has appeared in periodical medical literature upon the subject of the variations in blood-pressure that it has been quite confusing. The profession welcomes such a book as Faught's because it makes available for the clinician the present state of knowledge on this subject. Since Janeway's work, nothing so comprehensive has appeared.

The first chapters are devoted to the physiology of the circulation and the terminology of the study of blood-pressure. Minute descriptions of the principles of the sphygmomanometer, together with methods of use, are also inserted. The ambiguity surrounding the different phases in auscultatory determination of blood-pressure is cleared up in a chapter devoted to this subject. Normal blood-pressure and its variations are also discussed from the standpoint of the experienced clinician. It is doubtful if any part of the book will better repay careful perusal than this which explains the factors that cause variations in blood-pressure during health.

The study of blood-pressure in acute infections, in the chronic infections, and in miscellaneous conditions is illuminating and lucid, and here the author brings to the reader the vast amount of information which has accumulated in the past few years and puts it in available form. Naturally, arteriosclerosis and nephritic hypertension occupy much space; also the bearing of blood-pressure on surgery and ob-

stetrical practice, as well as on life insurance examinations.

The author is to be congratulated in that he has written a book which cannot fail to be a distinct addition to the clinician's resources.

—CROSS.

THE ROENTGEN DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL. By Russell D. Carman, M. D., Head of Section of Röntgenology, Division of Medicine, Mayo Clinic, and Albert Miller, M. D., First Assistant in Röntgenology at the Mayo Clinic. Octavo of 558 pages with 504 original illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, \$6.00 net; half morocco, \$7.50 net.

This volume, the most exhaustive yet published on the subject in any language, meets a real need. It will serve equally well as a reference work for the röntgenologist, and as a guide for the internist or general practitioner who prefers to attempt his own Röntgen interpretations. Indeed, it should prove a valuable and interesting addition to any medical man's library.

There is no part of the broad subject treated which is not thoroughly covered, and the illustrations are well selected and admirably reproduced.

It is refreshing to review a book on Röntgen diagnosis which has received such care and thought in its preparation. The writers have been generous to a fault in their recognition of other writers; and their own large experience, with their exceptional opportunity to check observations at the operating-table, lends special weight to their conclusions. Each section of the digestive tract is considered from the standpoint both of Röntgen anatomy and physiology and of Röntgen pathology.

Special chapters are devoted to apparatus, technique, interpretation, gall-stones, and diseases of the gall-bladder and liver.

There is good reason to believe that this book will be recognized as a classic in Röntgen medical literature.

—BISSELL.

NEWS ITEMS

Dr. Frank T. Benoit has moved from Madison to Slayton.

Dr. W. A. Meilicke has moved from Janesville to Nicollet.

Dr. M. A. Desmond has moved from Eveleth to Glenwood.

Dr. Ray O. Gardner has moved from West Concord to Eveleth.

Dr. Arne Oftedal has moved from Halstad, Minn., to Fargo, N. D.

Dr. E. S. O'Hare has moved from Washburn, N. D., to Wing, N. D.

Dr. Thomas J. Strong, of Williston, N. D., recently commissioned a lieutenant in the Army Medical Service, has gone to Fort Riley, Kansas.

Dr. W. E. White has moved from Ipswich, S. D., to Winsted, Minn.

Dr. W. H. Riley has moved from Rock Springs, Wyoming, to Aurora, Neb.

Dr. R. M. Wildish, formerly of Worthing, S. D., is now located at Graceville, Minn.

Dr. Harold Cooperman, of Grand Forks, N. D., was married on July 31 to Miss Anna Rabinovich.

The infantile paralysis clinic now visiting the smaller cities of Minnesota, is meeting generous patronage and doing a work of inestimable value.

A private of the First Minnesota infantry died of pulmonary tuberculosis at Fort Snelling a few days ago after one month's service—and "someone blundered."

The Homeopaths of Minnesota met in St. Paul last week to discuss means of the state's portion of 1,500 surgeons of that school who will join the Medical Reserve Corps.

The medical men of Minot, N. D., gave a splendid banquet last month to the men of that city and vicinity who constitute the hospital unit about to leave for active service.

Dr. Andrew M. Carr, son of Dr. Andrew Carr, of Minot, N. D., is at Cook County Hospital, Chicago, and is attached to the Rush and Cook County Red Cross Hospital Unit.

Dr. John A. Johnson, who has been practicing in Larimore, N. D., is now a member of the firm of Drs. Gislason & Johnson of Grand Forks, specialists in eye, ear, nose, and throat work.

Over 9,000 doctors have secured commissions in the Medical Officers' Reserve Corps, and 4,000 more have applied for commissions. If the war continues another year, 30,000 will be needed to supply our own and our Allies' armies.

The new La Salle Building, at the corner of Marquette Ave. and Seventh St., Minneapolis, will be ready for occupancy on Sept. 15. Physicians and dentists will occupy most of the building, and they will have beautiful and well-appointed offices.

Dr. William E. Patterson, ophthalmologist and otolaryngologist, of Waterloo, Iowa, is now associated with Dr. Frank C. Todd, of Minneapolis, in practice. Dr. Patterson was formerly connected with the University of Iowa, and has practiced in that state for fifteen years.

Dr. A. B. Ancker took charge of the St. Paul City Hospital on August 1, 1873, and has remained its superintendent for thirty-five years.

The hospital then had seven employees; today it has one hundred and sixty nurses and fifty visiting physicians, and it has a national reputation for efficiency.

The University of Minnesota Hospital Unit is now complete and ready for service. It is composed of 65 nurses, 152 enlisted men, and 26 surgeons. It has three ambulances and a generous equipment in hospital materials of all kinds, including a large motor car, the gift of Mrs. Charles S. Pillsbury.

Fifty patients in the State Sanatorium at Walker, Minn., were affected by ptomaine poisoning the latter part of June, as the Board of Control has just announced. The trouble was caused by the failure of an employe to sterilize the milk cans used in the hospital dairy. He had no faith in such work; he now has.

Dr. Cyril J. Glaspel, son of Dr. G. W. Glaspel of Grafton, N. D., is with the Northwestern University Medical School Base Hospital, Number 12, in France. Dr. Glaspel is a graduate of the School of Medicine of the University of North Dakota, and of Rush, and has recently finished an internship at Cook County Hospital, Chicago.

The diagnosis laboratory of the Minnesota State Board of Health set a new record on July 19 by examining 905 diphtheria cultures. This is the largest number of diphtheria cultures ever examined at this laboratory in one day. The work was accomplished without any extra help and without interrupting any of the other routine duties of the laboratory.

Among the physicians of North Dakota who have received commissions in some branch of the U. S. Army Medical Service are Dr. G. V. Jamison, of Devils Lake; Dr. R. D. Campbell and Dr. H. H. Healy, of Grand Forks; Dr. A. J. McConnell and Dr. Frank E. Wheelon, of Minot; Dr. C. S. Jones, Dr. H. T. Shobholt, and Dr. T. J. Strong, of Williston; Dr. C. E. Hunt and Dr. J. W. Livingston, of Valley City.

Dr. Wm. D. Kirkpatrick, who was formerly connected with the Fergus Falls (Minn.) State Hospital, and was one of the first men to go to Servia to fight typhus fever, has been again called to do the same work in Rumania. He is a senior major in charge of a unit of thirteen physicians with a full complement of nurses. This is heroic and prosaic work, cheerfully accepted and nobly done by physicians.

Nine licenses to practice medicine in North Dakota were issued by the State Board of Medi-

cal Examiners as a result of the July examinations as follows: B. W. Abrahamson, Anamoose; John A. Halgren, Bismarck; C. I. Spannare, Wahpeton; S. C. Loring, Rugby; C. W. Schrogge, Bismarck; F. F. Lang, Bismarck; N. W. Schumaker, Hettinger; H. O. Cooperman, Grand Forks, and Z. P. King, Tolley.

The Minnesota State Board of Health has been investigating a number of violations of the vital statistics law by undertakers who have buried bodies without the proper execution of permits and who have not secured death certificates from attending physicians until after the burial. The violator of the law in these cases is, of course, the undertaker, but, consciously or unconsciously, physicians are helping to make the violations possible where they issue death certificates in their ex-post-facto manner, and do not report the fact to the registrar.

LOCUM TENENCY WANTED

I wish to take a position as locum tenens for the months of August and September. Address 530, care of this office.

OFFICE FOR RENT IN MINNEAPOLIS

A good office for dentist, with two physicians, in Masonic Temple, rent reasonable. Inquire 504 Masonic Temple, Minneapolis, Minn.

POSITION OFFERED

The undersigned knows of two especially good locations in Minnesota for a German speaking physician. Write at once. Address 541, care of this office.

MINNEAPOLIS PRACTICE OFFERED

I am leaving for war service soon, and will turn over my practice to a physician renting my offices in the P. & S. Bldg., Minneapolis. Address 528 care of this office.

POSITION WANTED

I will substitute for surgeon going to war or out of town. Would consider any opportunity in surgery in Twin Cities or adjacent territory. Address 535, care of this office.

LOCATION OFFERED.

Doctor wanted, preferably German speaking, to locate here. New town, very large territory, assistance offered to right man. Address Timmer Commercial Club, Timmer, N. D.

PRACTICE FOR SALE

A \$4,500 practice in a modern Southeastern South Dakota town of 700. One competitor in a territory of 20 miles. Population is 50 per cent Scandinavian. A Swedish physician can do \$6,000 to \$8,000 business without surgery. Good chance for nose and throat surgery. Will sell practice, office fixtures, and drugs for \$300. Address 549 care of this office.

LOCUM TENENCY WANTED

I desire to take a place as locum tenens, or to buy a practice in South Dakota. I desire a location immediately. Address Dennis Sullivan, M. D., 1022 Eighth Ave. S., Moorhead, Minn.

SCHEIDEL-WESTERN X-RAY COIL FOR SALE

A Scheidel-Western 12-inch X-Ray Coil with two tubes and one stand, all in perfect condition, used by my late husband, is for sale at a very reasonable price. Address 545, care of this office.

LOCUM TENENS WANTED

I want a physician of experience to take my practice while I am in the army. I have a \$5,000 unopposed practice, and will make a liberal proposition to the right man. Address 552 care of this office.

LOCUM TENENS WANTED

I want a physician with experience to take my practice in northeastern South Dakota when I leave for military duty. This is a heavy practice and will make a very liberal proposition to the right man. Address 526, care of this office.

POSITION OPEN

A surgeon with a large private hospital in Minnesota, who expects to go to the front, wants some able man to take his place. One experienced in the practice of surgery will be preferred. Write at once. Address 543, care of this office.

ST. PAUL OFFICE FOR SALE

Desirable office located in center of business district at corner of Seventh and Robert streets. Have commission in U. S. Corps. Am subject to be called at any time. Address Dr. N. G. Mortenson, 403 Bremer Arcade, St. Paul.

PRACTICE FOR SALE

Practice goes to purchaser of my office fixtures. Good Minnesota town, with good schools, water, and electric lights. Good crops and good collections. No near competition. Have done no surgery. Catholic preferred. Address 550 care of this office.

OFFICE POSITION WANTED.

A young woman, 26 years old, wants a position as office girl, country preferred. Was with former employer, now deceased, for seven years. Am qualified for general office work. Can drive a team or run a car. Address 529, care of this office.

PRACTICE FOR SALE

Hospital and practice in Northern Minnesota. Average business per month, \$1,000. Hospital and office fully equipped, x-ray and electrical instruments included. Collections 85 per cent. Buyer must be able to do surgery. Address 542 care of this office.

MINNEAPOLIS OFFICES FOR RENT

Sept. 1. Strictly modern well-located six-room heated apartment with dentist's office. Good practice. Close to two schools, and Father Cleary's parish. Busy, rapidly growing, car-line corner. Attractive rent. Also apartment with physician's office. Address 534, care of this office.

OFFICE POSITION WANTED BY A GRADUATE NURSE OF FOUR YEARS' OFFICE EXPERIENCE.

A woman, aged 32, desires a position in a physician's office in the Twin Cities. A competent nurse with good references. Address 547 care of this office.

PRACTICE FOR SALE

First-class location in a growing town of 800 in Minnesota, on two branch railroads. Town has sewers and waterworks, and is building an \$80,000 schoolhouse. Have a six-bed private hospital. Have entered the Medical Service. Price \$1,500. No competition in field. Address 551 care of this office.

POSITION OFFERED

I want a young man to take my practice while I am absent on military duty. Practice is in a fine Minnesota village and pays between \$4,000 and \$5,000 cash. Nothing to buy; only office expenses to pay. If I get the right man, I shall be glad to have him remain permanently. Address 527, care of this office.

PRACTICE FOR SALE

In Minnesota town of 450, heart of lake region, no competition. Collections, 98 per cent. Territory, east 7 miles, west 10 miles, south 17 miles, north 17 miles. Scandinavian settlement. Protestant. Will sell office fixtures and good-will for \$300. Reason for selling, am going into the Navy. Address 536, care of this office.

PRACTICE FOR SALE

As I am specializing I wish to sell my office equipment, which invoices \$900; and the good will of a \$6,000 business. North Dakota town of 1,500. State Normal School, 15-bed municipal hospital, fine roads, good collections and plenty of territory. Immediate possession given. Price, \$600. Address 548 care of this office.

PRACTICE OFFERED

I am leaving with the Reserve Corps. Business pays from \$6,000 to \$8,000 a year. Will lease, rent, or sell to right party. Fully equipped office and residence, which I am leaving. A snap for a man who wants to work and make money. Will leave nurse with seven years' experience here if desired. Address 539, care of this office.

PRACTICE FOR SALE

A \$4,500 unopposed practice, in richest county of state; crops fine; good roads; collections, 98 per cent. Very large territory, good town, population, 500; railroad division; Soo R. R. appointment. Have good residence; will sacrifice same with practice, \$2,800, part down, balance terms to suit. Object of sale, specializing. Address 537, care of this office.

PRACTICE FOR SALE

A \$4,000 practice in a Minnesota town of 1,000 inhabitants, 35 miles from the Twin Cities. Competition, one aged physician. Population, German Lutheran and Catholic. Good pay. Office building, a 1914 touring car, and full set of instruments for an up-to-date physician. A good man cannot fail to make good from the start. Reason for selling, joining the Medical Reserve. Half cash; remainder, bankable notes. Address 544, care of this office.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

[illegible]

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	0															
Aitkin	1,719	1,633	2															
Akeley			2															
Appleton	1,184	1,221	2			1												
Belle Plaine	1,121	1,204	0															
Biwabik		1,696	6	1						1								1
Bovey		1,377	2															
Browns Valley	721	1,058	1			1						1						
Buffalo	1,040	1,227	1	1														
Caledonia	1,175	1,372	2															
Cass Lake	546	2,011	2															
Chisholm		7,684	6			1				1							1	
Coleraine		1,613	0															
Delano	967	1,031	0															
Farmington	733	1,024	1															
Fosston	864	1,055	0															
Frazee	1,000	1,645	0															
Grand Rapids	1,428	2,239	2			1												
Hibbing	2,481	8,832	13			3				1								1
Jackson	1,756	1,907	0															
Janesville	1,254	1,173	2														2	
Kenyon	1,202	1,237	1															
Lake Crystal	1,215	1,038	2															
Litchfield	2,280	2,333	4															
Long Prairie	1,385	1,250	2			1												
Madelia	1,272	1,273	1			1												
Milaca	1,204	1,102	2														1	
Mountain Lake	959	1,081	3															1
Nashauk		2,080	1	1														
North Mankato	939	1,279	2	2														
North St. Paul	1,110	1,404	0															
Osakis	917	1,013	0															
Park Rapids	1,313	1,850	1														1	
Pelican Rapids	1,033	1,019	2															
Perham	1,182	1,376	2															
Pine City	993	1,258	2															1
Plainview	1,038	1,175	2															1
Preston	1,278	1,192	0															
Princeton	1,319	1,555	5														1	
St. Louis Park	1,325	1,743	3		1													
Sandstone	1,189	1,818	4	1		1												1
Sauk Rapids	1,391	1,745	3															1
South Stillwater	1,422	1,343	0															
Springfield	1,511	1,482	3															
Spring Valley	1,770	1,817	0															
Wadena	1,520	1,820	2															1
Wells	2,017	1,755	0															
West Minneapolis	2,250	3,022	2															
Wheaton	1,132	1,300	1														1	
White Bear Lake	1,288	1,505	4			1				1								
Windom	1,944	1,749	2															
Winnebago City	1,816	2,555	3														1	
Zumbrota	1,119	1,138	2															

STATE INSTITUTIONS

Anoka, Asylum	1																	
Faribault, School for Blind	0																	
Faribault, School for Deaf	0																	
Faribault, School for Feeble Minded	4	2																
Fergus Falls, Hospital for Insane	7	4																
Hastings, Asylum	5	1																
Minneapolis, Soldiers' Home	8	1															1	
Owatonna, School for Dependents	0																	
Red Wing, State Training School	0																	
Rochester, Hospital for Insane	13	2																
Sauk Centre, Home School for Girls	0																	
St. Peter, Hospital for Insane	19	3				1												
St. Cloud, State Reformatory	0																	
Stillwater, State Prison	0																	

OTHER PARTS OF STATE

	789	61	13	75	9	4	13	0	6	3	8	3	24	52	4	52
Total for state	2126	182	52	181	19	6	37	0	8	4	40	7	37	162	11	123

*No report received. REGISTRAR not doing his duty.

133 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

A GREAT SITE FOR A HOSPITAL OR SANATORIUM

Special attention is called to the advertisement appearing elsewhere in this issue, offering, in our opinion, a particularly fine property at Lake Minnetonka for hospital or sanatorium purposes. We are familiar with the property, and can vouch for its desirability and believe it is especially well adapted for the purpose proposed.

THE FRANK S. BETZ COMPANY

Betz likes to startle medical men by offering them something as good as the best at prices charged for the cheapest.

This month, as shown in their card in another column, a set of Weiss Pattern Operation knives, three in number in a nickel-plated case, is offered for \$2 25, and an unconditional guarantee of satisfaction goes with each knife. That sounds good, and is good.

RHEUME OLUM

Rheume Olum is a comparatively new product put on the market by a Pacific Coast house (Seattle) to meet a demand for an ethically sold ointment containing the usual drugs composing such ointments, but a sufficient per cent of the principal ingredient to make it efficacious. For instance, Rheume Olum contains 25 per cent of methyl salicylate as against the usual amount of five per cent in other like preparations.

It is put up in tubes and sold only on physicians' prescriptions.

NATIONAL PATHOLOGICAL LABORATORIES

These laboratories, with offices in Chicago, New York and St. Louis, offer the profession all the facilities that the modern public laboratory can command, and their prices are very reasonable. Almost all of the laboratory work, required in the general practitioner's office, can now, with our present mail facilities, be done in the public laboratory with much greater skill and accuracy and at a much less cost than in the private laboratory; and no public laboratory strives harder to give satisfaction than does the above named institution.

THE MINNEAPOLIS SANITARIUM

The above named sanitarium, of which Dr. R. M. Peters is medical director and Mr. J. J. Baker is manager, is the only institution in the Twin Cities treating alcoholic and drug addicts in a perfectly ethical manner; and its very substantial growth demonstrates that the medical profession of the Northwest appreciates the manner in which the institution is conducted.

The victims of alcohol and drugs have been only too long imposed upon by fakirs, and it is well that they can be spared the expense and the imposition that befall them when in the hands of unscrupulous quacks.

A PATRIOTIC LAPEL BUTTON

We are advised that the Cystogen Chemical Company have mailed out thousands of these buttons upon the written request of physicians. We are

further advised that they are still sending them out, and will continue to do so until the second supply which they have received is exhausted. If you have not received one of the buttons, this company would be pleased to honor your request for same; simply drop a line to the Cystogen Chemical Company, 231 Metropolitan Bldg., St. Louis, Mo.

CALUMET BAKING POWDER

When the Calumet Company began an intensive advertising campaign in the Northwest a few years ago, we did not believe it possible to gain the confidence of the public so rapidly as it has. The secret of this success is to be found solely in the merit of the Calumet Powder as attested, not only by the biggest chemists and food experts in America, but by the common sense of the people.

The Calumet Powder is used in more hospitals in the Northwest than all other powders combined, and it has given results no other powder can give, and, then, it is much cheaper than any other high grade powder.

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Dr. Arthur W. Rogers, as resident physician of the Oconomowoc Health Resort, is doing a splendid work in the care and often the complete restoration of those suffering from nervous and mild mental cases.

The new building of the resort is a model in construction and has an unsurpassed setting in a forty-acre natural park.

The number of patients received by the resort is strictly limited to capacity of the building and the staff, thus insuring every patient complete personal attention at all times.

Oconomowoc is in the lake region of Wisconsin, and for beauty of environment and for climatic conditions cannot be surpassed in this country.

INTERESTING EXPERIMENTS AT THE BATTLE CREEK SANITARIUM

The war has given a tremendous importance to the whole subject of diet. Food ranks almost with bullets as a vital factor in the great struggle, and efficient utilization of the crops is just as necessary as big harvests. The Carnegie Institute of Boston is to conduct a series of experiments this fall to demonstrate whether men and women cannot maintain their powers on a smaller ration than has hitherto been accepted as the minimum. The Battle Creek Sanitarium has just finished a metabolism experiment lasting forty-five days, with ten subjects. The object was to determine the effect of different diets on the chemical composition of the blood. The results have not yet been tabulated.

THE MEYER NO. 2 INTERRUPTERLESS APPARATUS

The firm that has always made good and has gained the utmost confidence of the medical profession can safely use strong language in the description of its products when it knows that such language is thoroughly justified. In this spirit The Wm. Meyer Company, of Chicago, speaks of its No. 2 Interrupterless Apparatus.

The Company says this apparatus has unusual merit, that it will do things that no other like apparatus will do. In short, it is just the kind of apparatus medical

men need, and it is sold at an exceedingly attractive price.

All the apparatus of the Company is on exhibit at the rooms of the Standard Medical Supply Company on Lake Street, Minneapolis.

THE HYGEIA HOSPITAL

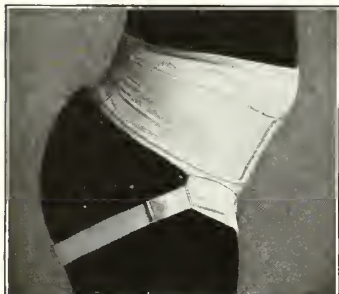
Dr. Wm. K. McLaughlin, the medical superintendent of the Hygeia Hospital of Chicago, took the medical profession into his confidence and gained its good-will by making known, in the columns of the *Journal of the American Medical Association*, exactly what is his

treatment for drug and alcoholic habits. While it is gratifying to a medical man to know what drugs his unfortunate patient is to receive, drugs are by no means all of the treatment, yet there are no secrets at any point. The highest medical skill, together with the proper medication, has given the Hygeia Hospital almost a national reputation for efficiency.

It is well worth while for men with patients seeking the best and safest treatment in the drug and alcoholic diseases to correspond with Dr. McLaughlin, the address is 2714 Michigan Boulevard, Chicago, Ill.

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SPECIAL ATTENTION

is called to the five, fine operating rooms on the fifth floor; to the Maternity Department, complete in every respect, and occupying the entire fourth floor; to the Children's Department occupying the south half of the fifth floor, where fifty children can be cared for at the same time; to the X-Ray Department, which has one of the finest equipments to be found in the country, with an Expert Roentgenologist and assistant constantly in attendance; to the Pathological Laboratory under the direction of an expert, who will give prompt and accurate service to this department in or out of the hospital. The watchwords of this institution are **UNSELFISH—IMPARTIAL—IMPERSONAL**.

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THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, SEPTEMBER 1, 1917

No. 17

HOSPITAL STANDARDIZATION*

By JOHN G. BOWMAN,
Director of the American College of Surgeons
CHICAGO, ILLINOIS

Mr. Chairman and Members of the South Dakota State Medical Association: All the morning I looked upon your corn-fields and green pastures from the window of a slow train. I was glad that the train was slow. I am at home in this land where bobolinks and green fields and strong, honest men and women all live in as perfect equality as this world affords. Tell me, do you know what a paradise is yours?

But we are here now to consider hospitals—to devise ways which shall make for the better care of sick people in hospitals. Well, what sort of hospitals do you want? And how wide is the gap between what you want and what you actually have? What are the chief obstacles in this problem with which you must contend? I do not mean *obstacles*. In South Dakota today there are no real obstacles in the way of creating hospitals which shall be as perfect as all medical science and the science of efficiency can decree. All that is needed is hard work, backed by sound sense and a pervading desire to leave our communities better than we found them.

Where, then, shall the hard work begin? Perhaps what comes to you first in answer to this question is your board of trustees or the governing authority of your hospital. Does the individual trustee realize his responsibility? Does he know that his task is the saving of human life, just as yours is?

The hospital is a public institution, no matter who owns it, and it is accountable to the public

for the character of its work. A great majority of hospital trustees, in my opinion, have only a hazy idea of what their trusteeship means. For example, if in one hospital in a community there is a mortality of 18 per cent in appendicitis cases; and there is in another hospital a mortality of 3 per cent in similar cases, the time has come for many pertinent questions. Do the trustees ask the questions? Has the public a right to ask questions? If you were to be operated on for appendicitis in that community, would you ask questions?

In the program of the American College of Surgeons to standardize the hospitals of the United States and Canada, these are the sort of questions that must be asked. The general public must be enlightened and stimulated, then, to work with the profession toward conditions as they should be.

But to come back to that board of trustees: What steps may the board take toward honest, competent service? The first answer to the question which the College insists upon is that the board withdraw the privileges of the hospital from any doctor who divides fees. This subject is not a pleasing one to talk about. The practice of division of fees is a disgrace to the profession; it is a disgrace to South Dakota if any of you are guilty. The practice means, invariably, operations performed by incompetent men; it means unnecessary operations; and it means the lowering of the entire profession into a mire of dishonesty. It means—you know what it means in cost of life.

*Oration in Surgery, presented at the annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

In about fifteen states of the Union today the practice is prohibited by law. The penalty provided is usually the revocation of the doctor's license and the imposition of a fine or a term in prison, or both. Copies of these laws are now framed and hung in conspicuous places in some hospitals. Certainly, in all hospitals the boards of trustees can take effective means to put an end to the practice in their respective hospitals. Any board which does not squarely meet the issue is unworthy of its trust.

A second leading consideration for the board of trustees is the adequacy of the diagnoses. And this subject leads us at once to the hospital laboratory. Where are the essential physical findings to be made if not in the hospital laboratory? Let me ask you frankly what percentage of surgical operations are performed in your hospitals after all data which might throw light upon the illness of the patients have been obtained? In a local medical society recently a surgeon ventured the opinion that not in more than 20 per cent of the surgical cases were adequate diagnoses made. Now, what are the facts in each of your hospitals? What are you doing in the way of progress for better conditions? What are your boards doing? What will the public do when it comes to realize fully the vast unnecessary mortality because of negligence of right procedure?

But the acquisition of data in connection with diagnoses is only part of the function of a hospital laboratory. The laboratory serves also as a source of scientific incentive. It is a chief means to keep the physicians and surgeons of a community in line with the swift progress of medicine; and the value of such an influence is a thing which no community can over-estimate. Especially is this true in a great rural state like South Dakota.

In passing this subject, let me make this suggestion: It is that no surgical operation be permitted in your hospitals unless a diagnosis in each case is posted in the operating-room in advance of the operation. This diagnosis, then, is to become part of the permanent case-record; and before the surgeon leaves the operating-room he should dictate an exact statement of the findings and what happened at the operation, which statement is to become also part of the permanent case-record.

Now, a third consideration is the keeping of case-records. The keeping of complete records is not merely nice book-keeping. It is a pledge

of integrity to the public. It is one of the strongest means at the command of the profession to acquire the position of confidence to which it is entitled. There can be only one science of medicine; and it is the business of that science from time to time to give to the public, in accurate and intelligible form, the results of its work. Further, you in the medical profession should insist that all who claim to treat or cure human illness publish accurate and intelligible reports of their work. Such a program would quickly put an end to medical sectarianism. Is there any reason why each of your hospitals should not publish, at least annually, the truth about end-results? Will your next hospital report really tell the story of your work?

There are many other subjects which we might discuss this afternoon in connection with hospital standardization. The training of internes and of nurses, financial problems, equipments, etc., are among these. But time here permits only a general survey.

The American College of Surgeons has undertaken with great seriousness a standardization of hospitals in the United States and Canada. Many years and the expenditure of much money and effort will be required before telling results are obtained. But to start with, the college asks the good will and co-operation of all hospitals and of medical schools. It asks that with the highest medical patriotism in us we band together for the better welfare of those who are ill. The motive is not to criticize for the sake of criticism, nor to destroy, but, rather, to construct, to lead in a progress of heart and hands and head such as is yet unrecorded in the history of medicine.

DISCUSSION.

DR. J. C. BAKER (Ramona): Dr. Bowman touched upon the personnel of the trustees of hospitals. What are you going to do, or how are you going to bring about a better condition of the personnel of trustees in a good many of the smaller hospitals? Take the isolated cases—and we have had it happen frequently—where the trustees are men who are largely ignorant of medical matters and are elected trustees because of their financial standing in the community or because of their donations to the hospital. These men do not know anything about medical matters and, many times, do not understand the situation. How are you going to control them and educate them to a realization that these things are necessary?

DR. BOWMAN (closing): Progress toward better conditions in hospitals is an evolution. It has been going on since hospitals began; it will go on after all of our accounts with it are closed. And let me emphasize that the heart is needed, as well as the head, if our direction is forward.

The American College of Surgeons, composed of about three thousand five hundred surgeons, proposes now to turn its influence on this problem. The first task of the College, obviously, is to set forth in plain United States English what you, representative physicians and surgeons, want for your patients; then with your co-operation and earnest help to go about making those things come true.

In this discussion I can add little to what I have already said. But let me emphasize the need that we create among hospital trustees a keen sense of their responsibilities. It is our task to stir in them a pride in their hospitals, that pride to rest upon the welfare of the patients rather than upon petty saving here and there in expenses. Would it mean a good deal to your work if each of your hospital trustees would get this view-point clearly in mind and would go home and tell his wife, that, after all, he had a big and important work to do and that he was determined to do it? Such a spirit would mean the saving of human life almost beyond our conception. It would mean that your community would soon give you gladly the facilities you need.

Progress lies in personal contact, contact characterized by confidence and intelligence. Such contact the College hopes to bring about through its investigators working along lines which you from time to time may consider with us.

DR. J. G. PARSONS (Sioux Falls): There are still some misgivings on the part of some people as to whether or not prohibition will prohibit, and I would like to have it elucidated a little more clearly as to

whether the prohibition of the American College of Surgeons will prohibit fee-splitting. If so, and if you have any formula that you can hand out to us to enable us to get into the game, and if you can then send a representative around to help us clean up, for God's sake give it to us and do so quick. When this Association met in Yankton last year we succeeded in getting a resolution passed condemning the matter of commissions. I was considerably in hopes that the diplomats of the American College of Surgeons would have a salutary effect on things of that kind, but I have not had opportunity to observe any very serious results yet.

DR. BOWMAN: As far as this applies to the American College of Surgeons, all we need is evidence and the man goes out. The College has made many investigations of such cases. It has already expelled men for unworthy conduct, and, I regret, has more such tasks to do. It is an unpleasant job to go into a man's office and take up such a matter with him. I know from experience. And I know from experience that if a man is guilty that fact can be established. Fee-splitting will out.

Somehow with amazing swiftness these days we are impelled by a higher and higher sense of honor. Our entire business world is witness to this change. And the medical profession is witness to this change. In one community after another where five years ago fee-splitting was the usual practice there exists today none of it. Even in Iowa and Central Illinois it will die; and if it exists in South Dakota it will die here too as soon as your intelligent people know the awful consequences which attend the practice.

OCULAR TUBERCULOSIS*

BY FRANK E. BURCH, M. D.

ST. PAUL, MINNESOTA

There has been a tendency in medicine and surgery to acknowledge the eye as something apart—something the specialist alone should treat. It is probably quite as true of this as of any other organ that manifestations of general diseases are frequent, and their interpretation rarely difficult.

Familiarity with causes of all diseases by practitioners of medicine, whether general or special, must be the fundamental basis for diagnosis and treatment. Co-operation gives better results than independent work. The ophthalmologist must work with the internist, the pathologist, the rhinologist, the dentist, the radiologist. The surgeon and internist likewise are frequently aided in their diagnosis by the ophthalmologist.

Few problems in ophthalmology are more interesting than those which concern the etiology of certain obscure and chronic eye lesions. Ocular tuberculosis is now being more frequently

recognized by ophthalmologists. Because of this, and because of the tendency in the medical world to regard almost every chronic eye inflammation as syphilitic in origin, the more general employment of the tuberculin-reaction test is urged as a diagnostic aid in obscure ophthalmic conditions, as well as in uncertain diagnostic problems generally. Someone has aptly said of chronic ocular inflammation that, when syphilis and focal infections elsewhere can reasonably be excluded, tuberculosis should be suspected.

Raefaelson¹ found that 2.5 per cent of a series of 1,850 patients examined in the University of Strassburg eye clinic were tuberculous, and that practically one-third of all cases of inflammations of the uveal tract were tubercular.

By the addition of tuberculin to our diagnostic and therapeutic armamentarium, we are enabled to recognize and successfully treat many cases of ocular tuberculosis, hitherto ignored and unappreciated, being treated with eliminatives,—salycates, iodides, and mercury internally, and

*Read at the 36th annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

sedatives, cycloplegics, or lymphagogues locally, with very little hope of success.

The bitter disillusion following the mishaps with tuberculin used according to Koch's original ideas, led to the abandonment of this very important diagnostic aid for almost a decade. Von Hippel, after years of careful observation, has compelled oculists, at least, to concede its immense value for diagnostic purposes and has also established its use therapeutically along rational lines. His work has been repeatedly confirmed within the past ten years; and in the field of ophthalmology, tuberculin has surely attained a permanent place, whatever its therapeutic usefulness or limitations may be, in general or pulmonary tuberculosis.

Involvement of the eye manifests itself in two forms:

First, as direct ectogenous infection of the conjunctiva, lids, lachrymal apparatus, etc., and the various intra-ocular miliary tubercle manifestations within the eye. In all of these there are present distinct pathological evidences, either in the typical histologic structure (round-cell proliferation, central degeneration, Langham's giant cells, etc.) or lesions in which tubercle bacilli can be demonstrated.

Second, endogenous types of lesions, such as choroiditis and uveitis, phlyctenulosis, sclerosing keratitis, etc., in which no typical tubercle structures occur, and some of which represent the action of tuberculotoxins and not metastatic infections. This latter group can be diagnosed because it includes patients in many of whom old remote latent foci may be demonstrated, either in glands, joints, or viscera, by radiographic examinations of the chest, etc., the Wassermann or other evidence of syphilis being negative, and in whom typical tuberculin reactions are obtained, the disease responding remarkably well in many instances to therapeutic injections of tuberculin.

The lids, conjunctiva, and lachrymal sac, usually become infected directly from the sputum. Considering the frequency with which tubercle bacilli may find entrance to the conjunctiva, Roemer² believes that the action of the tears and the natural resistance and acquired immunity of the tissues prevent invasion unless a wound, from foreign bodies or otherwise, provides means of inoculation. Lesions are most frequently in the sulcus subtarsalis, where foreign bodies commonly lodge. The various forms of conjunctival tuberculosis are the following:

Grayish or yellow, hempseed-sized subconjunctival nodules.

Chronic, excavated ulcers, frequently with tubercle nodules surrounding them, almost invariably on the tarsal surface.

A pseudotrachomatous form, frequently monocular, characterized by papillary hypertrophy, granulomatous growths, with thickened lids, almost indistinguishable from trachoma except by bacteriological evidence and inoculation tests.

Lupus, extending from the face to the lids, not arrested at the lid margins and causing great destruction of conjunctiva, with cicatrization and entropion.

Pedunculated cockscomb exerescences and papillomatous tumors originating in the fornices and from the tarsal surface.

All forms are generally accompanied by enlarged preauricular glands. In the absence of spontaneous healing, diagnosis by inoculation experiments, the finding of tubercle bacilli after painstaking search, and the tuberculin test, can be made in many of these unusual lesions, which require differentiation from syphilis, trachoma, papilloma, and epithelioma. Surgical treatment by excision, cautery, iodine, and iodoform locally, with general hygienic measures and tuberculin therapeutically, are frequently curative.

The commonest eye lesion, which takes us into the realm of ocular tuberculosis still unsettled, is phlyctenular or eczematous conjunctivitis. It occurs in poorly nourished and debilitated children, and in those said to represent the strumous or lymphoid diathesis, or tuberculosis.

The clinical picture of this disease with its accompanying photophobia, blepharospasm, and facial eczema, is so well known as to require little description.

The lesions are discrete in character, never involving more than a portion of the eye surface, and frequently situated at or near the limbus. The phlyctenule may be described as a nodule, consisting of a heap of round cells beneath the epithelial layer, which usually rapidly ulcerates and heals. In the cornea the lesions are more serious because of the resulting opacities and impairment of vision and the danger of perforation with iris prolapse and its consequences.

There are several types: infiltrations, ulcers, and vascularizations, accompanied by rather definite symptoms, namely, blepharospasm, photophobia, and iritis, together with blepharitis, eczema of the surrounding parts, and chronic rhinitis. Vascularization is characteristic of phlyctenular

keratitis, the new blood-vessels proceeding from the conjunctival, and not from the deeper, vessels. It is a disease of childhood, less frequently met with after puberty, with a tendency to relapse and associated with the scrofulous diathesis in which one finds lymphatic stasis, adenitis, rhinitis, enlarged tonsils and adenoids, otitis, eczema, anemia, bronchitis, malnutrition, and leucocytosis.

Bruns³ contends that this disease is not produced by any specific toxin, but is rather a neuropathic phenomenon following auto-intoxication from the gastro-intestinal tract. While admitting that it occurs in individuals especially liable to tuberculosis or other infectious diseases, he fails to satisfactorily explain the 70 to 90 per cent of positive reactions, obtained by the von Pirquet and tuberculin reaction tests, reported by various investigators. He claims that it occurs in those who are "candidates for tuberculosis," rather than in children who are actually tubercular. Likewise, Theobald⁴ believes intestinal auto-intoxication causes the disease, and that the diagnostic tuberculin test is of little value in view of the fact that the same test shows scarcely a smaller percentage in healthy adults. He considers that proof of tubercle bacilli in the lesions in an extended series of phlyctenular cases is necessary, and contends that the employment of tuberculin as a therapeutic agent is unjustifiable, giving no better results than other methods of treatment, and that its indiscriminate use is capable of doing much harm.

Goldenberg⁵ is firmly convinced that the dietetic treatment correcting faulty carbohydrate chemism and the simple use of atropine locally and internally gives better results than antituberculous treatment.

While the theory of auto-intoxication and faulty metabolism has many adherents, for the most part, their convictions are based largely on the results of dietetic treatment (together with atropine and calomel locally) with results fully as good as when tuberculin and other antitubercular treatment is employed. Certainly, the intestinal intoxication theory applied to the etiology has not been so thoroughly refuted and disproven, that we are able to disregard it definitely.

Now what are the proofs which have placed phlyctenular kerato-conjunctivitis in the class of oculo-tubercular disease? According to Goldbach⁶ the type of cases in which one finds phlyctenulæ, is more frequently the adenitis type or arthritic type in children, although pulmonary

lesions are by no means infrequent, and the actual finding of giant cells or even of the tubercle bacilli in the lesions is not rare.

Wilder,⁷ reporting for the committee for the study of the relation of tuberculosis to diseases of the eye, found that 47 out of 51 collected cases of phlyctenular diseases showed distinct evidences of tuberculosis, either in a quiescent or an active form.

George S. Derby,⁸ of Boston, finds that 90 per cent of the cases of phlyctenular diseases give a positive tuberculin reaction, and that 10 per cent is a small percentage of error for any test of that sort. He does not think that tuberculin is necessary to cure a single attack, but that tuberculin, together with general hygiene, tonics, proper living conditions, diet, and supervision of the patient in tuberculosis classes (such as are maintained at the Massachusetts Charitable Eye and Ear Infirmary) prevent other manifestations of tuberculosis and prevent relapses of the phlyctenulæ.

A. E. Davis,⁹ who has made a most extensive report, believes the failure to find bacilli in the local lesions no more disproves the tuberculous character of the disease, than does the failure to find the spirochita in interstitial keratitis, disprove the syphilitic origin of that disease. He believes the presence, latent or chronic, of tuberculosis in other portions of the body, the high percentage of reactions to the von Pirquet test, and diagnostic injections of the old tuberculin prove beyond a doubt that tuberculosis is most frequently the cause of the disease.

Stevenson¹⁰ comments that "while nobody asserts that the phlyctenula itself is of tubercular histologic structure, or that it always contains tubercle bacilli, nevertheless the characteristic lesions occur only in those who are subjects of tuberculosis, latent or otherwise."

The evidence seems to be strongly cumulative, and with few exceptions, generally acceptable to ophthalmologists at least, that phlyctenular keratoconjunctivitis occurs in children who, for the most part, are naturally tuberculous, constituting the so-called "scrofulous" type,—if the term may be permitted,—or by their family history, associations, and unhygienic surroundings, are "candidates for tuberculosis." It is generally conceded that the results of tuberculin treatment, so far as the lesions themselves are actually concerned, have been no better than the old orthodox treatment with atropine and calomel or yellow oxide ointment locally, together with proper food,

tonics, and hygienic treatment. If tuberculin has any place in the therapeutics of this disease, it is in aiding the establishment of immunity.

Another form of the disease, the etiology of which is often overlooked, is the non-nodular form of iritis.

Brown and Irons,¹¹ investigating the etiology of iritis of the so-called rheumatic form, with most painstaking examination for syphilis, tuberculosis, and dental, sinus, tonsil, and urethral infection, as well as every other possible source of infection, found tuberculosis as the sole cause of the iritis in eight cases, and associated with other infections seven times in a total of one hundred cases. All of Brown's cases were of the plastic or serous type, and not, as I am able to understand his reports, the purely miliary or nodular types.

Nodular tubercular iritis, either of the solitary or multiple miliary type, most frequently begins at the pupillary or root margins of the iris, characterized by grayish-yellow nodes with irregular thickenings. It is not accompanied by the marked pericorneal congestion, typical of serous iritis, and is usually less painful. According to Roemer¹² the site of solitary tubercle is frequently in the angle of the anterior chamber, and is prone to produce scleral ectasis or staphyloma. When the ciliary body is involved, and a tubercle has its origin in the suprachoroidal space, little or no intraocular disturbances may be produced.

Gilbert¹³ believes that the miliary tubercle of the iris is frequently secondary to the main focus in the ciliary body. The diagnosis of these lesions from gummatous iritis and sarcoma, depends entirely upon the laboratory and clinical tests, although it must be definitely stated that surgical removal of the mass for pathological examination has proven decidedly disastrous, and inoculation tests are frequently disappointing.

Fuchs¹⁴ reports many cases of uveitis, cured by injections of old tuberculin, together with dietetic, tonic, and hygienic, and local treatment with atropine, iodine, heat, etc. Nodular tubercular iritis is now thoroughly well understood, and quite successfully treated, although, until the institution of tubercular therapy, treatment was invariably a failure.

I wish to mention a very interesting report of cases of retinal hemorrhages in young persons, by Jackson,¹⁵ in which the true character of the retinal lesions is proven by the finding of tubercular bacilli in some lesions, the characteristic histologic structure in others, as well as by the

positive tuberculin test and the response to treatment. The clinical picture is summarized as follows: "Vitreous opacities with recurring retinal hemorrhages, enlargement of the retinal veins, local lesions associated with large retinal vessels, white spots in the macula in some cases, optic neuritis, and 'retinitis proliferans' as a terminal condition." This, I am sure, constitutes a clinical picture which many of us have seen personally, and failed to recognize until Jackson's description was published. The absence of high blood-pressure, arteriosclerotic changes, and renal or cardiac diseases should certainly cause one to think of the possibility of tuberculosis in meeting with sudden retinal hemorrhages in young people.

In the uveal tract we find tuberculosis affecting the choroid, either as miliary tubercles, as exudative choroiditis, or as so-called conglomerate tubercle (often filling the vitreous chamber and occasionally mistaken for glioma). Multiple miliary tubercles have been most commonly observed as metastatic deposits in tubercular meningitis and general miliary tuberculosis, invariably affording a bad prognosis for these conditions.

Fuchs¹⁶ describes the solitary nodules as small ill-defined patches of yellowish or pale-reddish color, averaging 1 mm. in diameter. They are characterized by rapid growth, and, unlike the ordinary choroiditic spots, are accompanied by little pigmentation during the acute stages. I myself have a well-marked case of solitary tubercle in a young girl with both pulmonary and Pott's disease, which has been under my observation for a period of over ten years. This case, which is quite characteristic of the solitary choroidal tubercle, developed a patch, one-third the size of the optic disc, above the macula, lying under the superior temporal artery. It was distinctly elevated and rather sharply outlined, with comparatively little pigment degeneration when first seen. During later years the tubercle has undergone cicatricial changes with marked pigment-proliferation in the vicinity.

The exudative choroiditis of the disseminated type usually cannot be distinguished ophthalmoscopically from the inherited luetic manifestations: however, they should always be suspected, especially in children and young adults, and, in the absence of signs of inherited syphilis and negative Wassermann reactions, should be subjected to diagnostic tuberculin test. They are probably the manifestations of the tubercle toxins, rather than direct tubercular infections:

The following case-history is fairly typical:

In December, 1915, Mr. C. G. F., aged 32, came to me complaining of loss of vision in the right eye. His general health was good, and his family history was also good. He had had pleurisy with effusion four years before. He has been under treatment for one year on account of his eyes.

Examination showed a disseminated choroiditis in both eyes, the lesions being distributed throughout the fundus of the right eye, with scattered corpuscle-like pigmented patches in the left, the macula being uninvolved and vision 20-15. Wassermann tests on four separate occasions and by different pathologists were uniformly negative. Examination of teeth, tonsils, and sinuses, negative. Injection of 1 mg. of Koch's old tuberculin gave a decided local and general reaction. We could not be sure of any focal evidence in the eye. Series of treatments with minute doses of old tuberculin at weekly intervals, in several of which slight overdose reactions were produced, have resulted in checking the progressive character of the trouble; and now, after eighteen months, the process is apparently checked with vision in the left eye still 20-15.

Probably the most frequently seen chronic type of ocular tuberculosis is tubercular scleritis. Verhoeff¹⁷ has shown conclusively that scleritis and episcleritis, formerly believed to be rheumatic, are actually tubercular. With these are included certain types of keratitis and the sclerosing keratitis, which involve the same coat of the eyeball. These cases run an extremely chronic course, and the local and constitutional treatment of scleritis and episcleritis after methods formerly used, has been extremely discouraging, both as to direct results and because of the frequency of relapses. In severe scleritis the cornea, uvea, and iris, as well as the sclera, are often involved. In this type the prognosis is exceedingly bad, whereas in true nodular scleritis, episcleritis, and sclerosing keratitis the prospect for recovery under modern treatment is fairly good.

Wilder¹⁸ collected 59 cases of this character, of which 56 gave positive evidence of tuberculosis, either clinically or by test, and of this number 22 gave positive local reactions.

These conditions have all been readily reproduced in rabbits by inoculation experiments, and there is no longer much doubt as to their true character.

Sclerosing keratitis usually commences with episcleral redness and swelling in the palpebral fissures, soon followed by a tongue-shaped infiltration, yellowish-white in color, slowly pushing forward from the limbus into the interstitial lamellæ toward the center of the cornea. There occurs also an independent type, or sometimes associated with that just mentioned, in which nodules appear in the cornea and sclera, frequently coa-

lescing to produce opacity of the entire cornea. Whether these are produced by tubercular toxins or from actually transmitted infection, is not determined. It has rarely been possible to recover the bacilli from the lesions. This type of keratitis is independent and distinct from the mutton-fat patches or precipitates on the posterior surface of the cornea, seen in conjunction with tuberculosis of the posterior segment of the eyeball.

I have had under my care during the past year five cases of scleritis, in four of which the cornea has been involved. All gave negative Wassermann tests, and other sources of local infection were eliminated; and all gave positive reactions to tuberculin, and in all the results of tuberculin therapy have been most encouraging. In none of these cases was tuberculin therapy the sole treatment, local applications and atropine, almost continuously, being used, and after the inflammation had subsided dionin and yellow oxide of mercury were used to stimulate absorption. The results have been so much better than by the methods of treatment formerly in vogue as to be most striking and illustrative.

While the general facts in regard to tuberculin are well known, much evidence has been accumulated by very careful observations in ocular tuberculosis as to its diagnostic and therapeutic value. Old tuberculin is the form most generally used. It should not be used for diagnostic purposes when a patient is running a temperature, and the temperature should be taken every four hours for two days preceding the test. It is quite usually normal in ocular tuberculosis, not accompanying active lesions. For diagnostic test, an initial dose of 0.5 mg. is injected subcutaneously. The reactions which occur are general, local, and focal. With the general reaction there are malaise, headache, backache, chill, and increase of temperature, and sometimes nausea and vomiting in from six to forty-eight hours. The local reaction manifests itself by redness and induration at the site of injection. The focal reaction is an increased hyperemia and possibly pain in the ocular lesion, and is of decided importance in the diagnosis. However, in lesions of the posterior segment of the eye, such as choroiditis and retinitis, the focal reaction is not readily distinguishable, frequently because of a hazy vitreous. The general and local reactions are usually accepted as conclusive in the absence of syphilis or localized infections in the tonsils, teeth, sinuses, urethra, or elsewhere. If no reaction follows the

primary injection, a second injection of 1 mg. after a few days, and later, if necessary, a third injection of 2 or even 4 mg. should be given.

Jackson has pointed out the necessity of repeated injections in the interpretation of the test, not basing diagnostic reliance upon a single injection.

The absence of increased temperature, and of focal and local reaction after repeated tests, constitutes important negative evidence that the ocular lesion is not of tubercular origin.

The object of therapeutic tuberculin injections is to produce a specific immunity through the formation of antibodies, which destroy the tubercle bacilli and their products. It is an accepted fact that the immunity produced is incomplete and not absolute or permanent.

In children I believe the von Pirquet test is easier of application and positive in its conclusion. For obvious reasons the Calmette or Wolff-Eisner conjunctival tests are inapplicable when the eye itself is already inflamed. If a positive diagnostic reaction is produced, the therapeutic use of tuberculin may be proceeded with.

Opinions are still divided in regard to therapeutic dosage. Leber asserts that "focal reactions are unavoidable as expressions of its specific influence, and are therefore indispensable for therapeutic effect." However, most ophthalmologists believe, with von Hippel, that only minute doses should be used, and that reaction of any type should always be avoided. Von Hippel recommends for adults an initial dosage of $\frac{1}{500}$ mg. (and as small a dosage as $\frac{1}{10000}$ mg. for children), gradually increasing and repeating at intervals of three or four days until the dosage attains 1 mg. in adults.

The clinical thermometer is the most important guide we have in regulating doses. The complicated opsonic index will never become popular among general practitioners. If the slightest reaction, general or focal, occurs from the therapeutic dose, it should be reduced in amount.

There are some twenty varieties of tuberculin being used for immunizing purposes in this country and abroad, but the old tuberculin, new tuberculin, and bacilliary emulsion produce fairly standard results. I am not prepared, personally, to discuss the relative merits of the different products, as all of my own experience has been with old tuberculin.

Von Ruck believes that the nature or derivation of the tuberculin is of less importance in treatment than the method of its administration,

dosage, and regulation of intervals between doses.

In answer to the criticism of danger of lighting up tubercular foci by tuberculin diagnostic test, I would personally prefer to assume the risk of lighting up the foci in order to make a diagnosis and be enabled to secure the therapeutic benefit of tuberculin treatment, which, with the dosage laid down by clinical experience is quite without danger. Tuberculin, scientifically used, has proved an advance in therapeutics, and is a specific therapy. Mishaps are sure to occur, but may always be accounted for by failure to follow the lines laid down in regard to dosage and frequency of injection.

Tuberculin therapy should not be overestimated and, of course, should not be employed to the exclusion of hygiene, tonics, diet, and all the local and general means at our command. Then, too, we have the factor of spontaneous recovery. We know that some of the ocular lesions, as compared with other forms of tuberculosis, are relatively benign. The very fact that so many of these proven cases of ocular tuberculosis occur in patients with old latent foci of the disease, or in whom no focus can be demonstrated, and the fact that patients having chronic ocular tuberculosis seldom, if ever, die from general or pulmonary tuberculosis, can be explained only by Verhoeff's theory that the bacilli become not only relatively but absolutely less virulent. Perhaps the patient has a more or less established immunity, and the ocular lesions manifest themselves and become active only during a period of lowered resistance.

Conjunctival tuberculosis, wherein the disease is usually primary, presents the most resistance to tuberculin therapy. Phlyctenular types, about which there is so much controversy, but which, nevertheless, afford the highest percentages of response to diagnostic tests, have afforded some striking results, not alone as regards the local lesions, but especially in the prevention of recurrence.

In iritis, iridocyclitis, and keratocyclitis, results have been exceedingly gratifying. In choroiditis, hitherto generally accepted as syphilitic in origin, the results of tuberculin therapy have been of the utmost service, excepting the conglomerate or solitary tubercle and the multiple miliary forms. In retinitis the results are not in proportion to the diagnostic value of tuberculin. In nodular scleritis, episcleritis, and sclerosing keratitis the results have been especially good.

I wish to lay especial emphasis on the necessity of general treatment, hygiene, fresh air, food, tonics, and frequently hospital or sanatorium treatment and the removal of enlarged tonsils and adenoids and caseous cervical lymph nodes. The best skill at our command is necessary to combat local symptoms.

In conclusion, I would say that he who disregards the tuberculous character of obscure ocular diseases, and does not use tuberculin for both diagnosis and treatment, is not practising modern ophthalmology.

Also, that tuberculin holds the same relative value in the diagnosis of tuberculosis that the Wassermann test holds to syphilis, even though one is a clinical and the other a laboratory test.

Therapeutically employed, persistently, intelligently, and along proven lines,—that is, with the proper dosage, proper intervals, and with the studious avoidance of reactions,—it is a remedy of the greatest value, but greater judgment is required in its employment than is necessary in the administration of salvarsan.

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DISCUSSION

DR. J. G. PARSONS (SIOUX FALLS): I am sure we have all enjoyed Dr. Burch's very able paper on this subject. While the details of some of the ocular conditions perhaps may not be of such particular interest to the general practitioner as they would be to those engaged in special work, nevertheless, his presentation of the subject must of necessity be of great importance to every man engaged in the practice of medicine.

I think there has been a considerable tendency on the part of many physicians perhaps to under-estimate the significance of the part that tuberculosis plays in the

causation of different ailments which we are called upon to treat. Since we have had dinned into our ears the old German saying, that "Jedermann hat ein bisschen Tuberculose," and with the application of the von Pirquet and Moro tests, which show that this occurs in a great many people who are apparently free from tuberculosis, we have had a tendency to shrug our shoulders, and say, "What's the use?" It appears to me that the presentation of a paper of this kind ought to have a very wholesome effect in waking us up to consider the bearing that tuberculosis may have upon other things. When we bear in mind that it is a well-established fact that childhood is the time when tuberculosis gets in; that childhood is the age of infection and early adult life is the age of superinfection; and when we have added to these infections the matter of secondary infections from other germs, the mixed infections, then we have some very important things to bear in mind in our consideration of any case, that is, of an infection where tuberculosis may possibly be a factor.

The fact that tubercle germs have not been found with uniform regularity in these phlyctenular infections of the eye, has been an argument in the hands of some,—for example, Bruns, whom the essayist has quoted,—that tuberculosis is not a necessary factor in these infections, that these people are candidates for tuberculosis. It seems to me, with our knowledge of the pathology of tuberculosis, that there is no such thing as a "candidate for tuberculosis," that people are either infected mildly or seriously, and that their candidacy shows that there is some tubercle element present. The failure to find the tubercle bacillus has been accounted for in some cases on the theory that the germ is broken up into very small fragments which are analogous to the colloidal state, and may not be determined by any stain, although they have an irritating effect, showing that the tuberculous element is there. It may be that we have germs of low virulence, which do not produce results in inoculation experiments.

But, it seems to me, there is one factor which we should bear in mind in this connection, and, as I recall, the essayist did not bring this out. I refer to this "candidacy," if you please, this tuberculous substratum, which may not of itself be sufficient to cause a definite tubercular lesion, yet may be the basis on which may be engrafted some other extraneous infection or some more virulent tubercular material, which is rare, through the nose and through the addition of some other infecting agent here,—a focal infection through a nasal sinus or reflex irritation through trophic disturbances through the nerve supply. We may have in this way a condition which would explain a lot of the disturbances of this kind; a very mild tuberculosis phase, which may give us serious results.

It seems to me that there is an important point which we should not neglect to take into consideration, and that is the focal infections, and, particularly, the nasal lesions which are so often associated with these tubercular infections of the eye.

I think a word of caution should be uttered in regard to the use of old tuberculin, for considerable harm may be done by using this carelessly, and while for some conditions it may be necessary, it is better to stick to the von Pirquet reaction.

MEDICAL JOURNALS FROM THE STANDPOINT OF THE CONTRIBUTOR*

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My official position of buffer between contributors to and editors of medical journals does not lend itself readily to an unrestrained discussion of this topic. If it were not that the medical editor is so often the medical publisher as well, I should find myself always in sympathy with the editor. The editor, confronted with many and varied manuscripts with very little time in which to reduce them to law and order, unfortunately, is often misinterpreted in his efforts to secure the best results with the least possible friction and delay. The contributor is very apt not to appreciate the reasons for the revision. Indeed, the opinion seems universal among writers that many of the rules and regulations regarding the editing and publishing of papers are both perplexing and inconsistent. It would seem that editors and publishers are not generally aware that many of their contributors would gladly co-operate with them in bringing about some form of standardization which would cover, at least, a few general rules and permanently settle various unimportant though harassing details in relation to so-called printer's style.

Assuming that the writer is capable of grouping his ideas clearly and logically into sentences and paragraphs, and that he has in mind a definite plan for the construction of his paper in keeping with the material in hand, there is, nevertheless, a chance that his plan will not meet the requirements of the journal to which his article is sent. If the article is accepted for publication the shock to the writer in finding how far his ideals differ from those of the editor does not come until the proof is received. He may then find a changed title, inserted or revised headings, transposed paragraphs, tabulated statistical data pulled down and put into the text, or vice versa, and innumerable minor corrections. If the contributor is good natured and is conscientiously trying to improve his writings, he accepts these arbitrary changes with more or less gratitude, and determines to profit by them in the preparation of papers in the future. The obvious happens: his next manuscript comes back in the form of galley-proof from some other representative journal in still another puzzling transformation; and he

may repeat this experience with each of the "57 varieties" of medical journals, the editors of which all claim individual rights in the matter of style.

In order to prevent these constant misunderstandings, it should be possible, by joint conference between representative contributors, editors, and publishers to adopt certain general rules. The following are suggested as examples of such rules as might be considered and adopted:

1. Titles should indicate clearly to the reader and bibliographer the matter within. Much valuable material is lost to investigators because the titles used are nothing but vague generalities, and, therefore, can find no proper place in the current indexes.

2. Bibliographies should give each author's name and initials, the title of the article, the name of the periodical in which it appeared, the year of publication, the volume number, and the inclusive paging. Particular emphasis should be placed on the inclusive paging, as it is a matter of considerable importance to the reviewer to know the length of an article. In this connection it might be suggested also that, when only an abstract has been read, the writer, in referring to it, should, in all fairness, make reference to the abstract rather than to the original article from which entirely different conclusions might have been drawn.

3. Uniform rules should be made for main headings, subheads, abbreviations, numerals, etc. One able editor writes "1½ inches" in figures, another insists on spelling it out, and a third, equally eminent, compromises by using both forms in the same sentence.

4. Foreign words and phrases should be abandoned when the English substitute will serve the purpose as well or better, and Latin and Greek plurals and diphthongs should be discarded.

5. Italics for emphasis should be excluded, and their use for such foreign words as may not be discarded should be minimized. Italics in English and their substitute, the wide spacing of the letters of a word, so common in German literature, equally insult the intelligence of the reader.

6. A standard size, or, at most, two standard sizes, of page forms for medical journals should

*Presented by invitation before the American Medical Editors' Association, New York City, June 4, 1917.

be adopted. Contributors like to know how many pages their manuscripts will make. They would like also to be able to arrange their own tabulations, charts, etc., before sending them in for publication. All drawings and photographs could be made to correspond to one or the other of the two sizes, and would not lose value in the reductions sometimes necessary in order to accommodate them to the page.

Why would it not be possible to give the writer an idea of the approximate date on which his article will be published? The indefinite postponement of the publication of his paper for months after it has been submitted, constitutes the chief grievance of the contributor against the editor and publisher; and it is a real grievance in these days when priority of publication is accepted witness to the priority of research results. To affix the date on which the article was submitted for publication is not adequate compensation.

In this age of standardization it would seem that the Medical Editors' Association might adopt some standard of medical publication. As example of what may be done in even a short time, we have the recent work of the committee on standardization of drugs, reagents, instruments, and apparatus of the Medical Section of the Council on National Defense. It would be interesting to know just how far this revision was stimulated by enforced attention to the ponderous and impractical supply lists made many years ago, but now quite obsolete. It is to their credit that this committee apparently did not attempt to choose from the old lists in making the new ones. They reverently shelved them, and substituted a list much shorter and better suited to present-day purposes. In a similar manner differences of opinion regarding rules for publication might be settled by a committee of contributors, editors, and publishers of medical literature. If such a committee could view the many differences, variations in style, etc., in their conglomerate mass, it is more than probable that they, too, would be willing to cast them all aside, and begin anew.

Another important and disputed question concerns the extent of the editing of the individual contribution. We all know that, having grasped the plot in a badly worded manuscript, it is much simpler to rewrite it according to our own version and conceptions than it is to put these in the background, and laboriously follow the argument in its original form, keeping in mind the writer's point of view and preserving his legitimate right

to tell his own story in his own way. Here the editor's zeal for brevity is apt to intrude. The relation of brevity to literary style in medical literature is worthy of consideration. It is unquestionably true that good literary style in American medical literature is rare. There is, indeed, a marked difference in this respect between the medical papers written here and those written and published in some other countries, for example, England and France. I hasten to anticipate the argument which I, myself, have used many times, that American physicians are a practical, busy, ambitious, crowding, and hurrying folk who think it is absolutely imperative, in order to satisfy a clamoring public and to advance their own particular ends, to announce their views and their wares without delay. Nor is the fault entirely with the writer. The editor of the progressive medical journal also feels the necessity of supplying his progressive subscribers with the latest thought of as many medical writers as possible. Again the result is obvious: manuscript is returned to the writer with the request that it be reduced to the smallest possible space in order to make room for other papers. The editor may even suggest the manner of reducing it, or, if he has the courage of his convictions, he may delete and transpose it to his own satisfaction and to the bewilderment of the writer.

It would be difficult to draw the line between the contributor's, the editor's, and the publisher's responsibility for the present unliterary quality of American medical literature, but one point must be particularly clear to all,—that some reform should be instituted; some definite procedure which will enable the writer, the editor, and the publisher to work together for results more in keeping, dignity, and scientific worth with the ability and the independence of men in the American medical profession. It would be well if medical legislation could go further, and limit and classify medical journals. This would enable the writer to determine for himself the best medium of publication for his article. In addition to the fact that many of the journals now in existence are a discredit to the profession, there is also the tragedy that their doubtfully valuable contents are included in our already overcrowded indexes.

With regard to the subject-matter of medical articles: It does not seem possible that editors of medical journals should find it necessary to go on indefinitely publishing so much material that is of little or no value. To the casual

observer there seems to be no adequate reason for the editorial failure to discriminate between the excellent and the unworthy. Impromptu talks to popular or semi-scientific societies by celebrities, who, importuned to speak without preparation, often restate age-old ideas or improbable hypotheses, should not be sought for publication by editors and publishers. On the other hand, the details of original investigation should be asked for, and should not be so curtailed or mutilated in publication as to make it impossible to determine the worth of the material. In this respect the custom of German editors might be more nearly approached. Articles of such character could be published serially, instead of in a number of disconnected articles in which, though the record of the investigation may be unbroken, the whole problem is not apparent to the reader. Thus when the ideal in the publication of medical literature shall be attained, the investigator will not be obliged to wade through pages of words in order to find one, or not even one, small item of useful knowledge, nor be annoyed by the curtailment of really valuable studies that should be published in detail.

Still moving toward the perfect in medical literature, would it not be practical to publish in each issue of a medical journal short biographies, a "Who's Who," of the contributors to that issue, as is done by the *Atlantic Monthly* and many other good literary magazines? These biographies should contain the author's full name and address, his degrees, medical positions, specialty, etc. The reader would appreciate this, since, at a glance, he might be able to identify the particular "William Jones" writing on appendicitis, and, possibly, to evaluate the article without reading it.

Finally, I would recommend that the American Medical Editors' Association take the initiative in bringing about the appointment of a committee of representative contributors, editors, and publishers whose duty it shall be to further the cause of medical education by standardizing medical literature and medical publications, by discouraging the circulation of low-grade journals, or, if possible, suppressing them, and by the adoption of universal rules which will bring about a more intimate association between contributors and editors.

TONSILLAR INFECTIONS AND THEIR DIAGNOSIS*

By SVERRE OFTEDAL, M. D.

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The tonsils are lymphoid structures. They belong to the body's great army of defense. Together with similar structures, the adenoids and lingual tonsils, they form a complete circle of protection around the most exposed portion of the human body. Under natural conditions they are fully adequate in their function. There is ample evidence to show that the tonsils carry on this function normally and that they ingest an enormous amount of bacteria without themselves becoming affected. Wood has shown that anthrax bacilli may pass directly through the epithelium of the surface and crypts into the parenchyma with no histological changes of the gland. Harbitz, in studying, post mortem, a large number of cases clinically tuberculous and non-tuberculous, was able to demonstrate by cultures and animal inoculations tubercle bacilli in tonsils, adenoids, and cervical glands that, grossly and microscopically, showed no tuberculous lesions. How then, do these structures become so fre-

quently diseased? For our answer we must consider our habits of civilization. While nature intended us for out-of-door existence, and that our diet consist of the simplest kinds of food, we spend a great part of our existence within doors, often under unhygienic conditions. Our food by no means conforms to nature's original intentions, either in quantity or in kind. The carbohydrates particularly are far in excess of the normal proportions. This causes fermentative processes to take place, and the bacterial flora of the mouth becomes enormously increased, especially after the teeth begin to decay. If the reaction of the mouth in these patients is tested with a piece of litmus paper it will almost invariably be found to be acid. It is said that among the peasantry of the European countries where the people live constantly on simpler foods, tonsillitis is a rare disease, while all the ills that follow it are proportionately less than in the cities and more prosperous districts.

When such an enormous burden is added to the work of the tonsils they themselves finally

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

become affected, either acutely or chronically. The resulting reaction may or may not manifest itself by local symptoms. The most important consideration, however, is the metastatic infections that, on account of the intimate relation existing between the tonsil on the one hand and the lymphatics and blood-stream on the other, often take place. For convenience we may divide these under two headings, the lymphogenous and the hematogenous.

The lymphogenous group includes the chronic pyogenic infections. These are usually due to a staphylococcus. The resulting adenitis subsides, as a rule, readily after tonsillectomy. We are coming more and more to the conclusion, however, that these lymphogenous infections are at the base a manifestation of tuberculosis. We have considerable evidence to show that tuberculosis, especially in children and young adults, is most often primary in the tonsils, sometimes in the adenoids. Park and Krumwiede found that 61 per cent of tuberculous cervical adenitis in children under five years of age are caused by the bovine bacillus, which must have gained entrance to the body by ingestion, presumably from infected milk. In the series of 1,000 tonsillectomies reported by Crowe and his associates, among 46 proven tuberculosis cases between the ages of four and thirty-four, 5 were between four and five, and 14 between five and ten years old. In other words over 41 per cent of the cases of tuberculosis of the tonsils and adenoids were found in children less than ten years old. In a large majority of these cases tuberculosis of the cervical glands was the only complication present, and the usual indication for operation. This seems to point directly to the tonsils and adenoids as the primary source of infection. As a matter of fact, bovine tuberculosis seems to have a predilection for glandular tissue, and practically never causes pulmonary tuberculosis in the human. While the above cases are those having tonsils or adenoids proven to be histologically tuberculous, there are a large number in which no histological changes can be found, which have been proven by animal inoculation and culture to harbor tubercle bacilli. Bartel and Spieler have found that 11 per cent of the animals inoculated with tonsils developed tuberculosis. None of the tonsils injected had shown gross or histological tuberculous changes. It may be inferred from these facts that tuberculosis of the tonsils and adenoids is often overlooked. It may safely be stated that in every case of cervical adenitis, where pediculosis, lues, malignancy, blood dis-

eases, and general adenopathy can be ruled out, the tonsils and adenoids should be removed, regardless of their appearance and size. In a surprisingly large number of cases the nasopharynx will appear practically normal, and even the removed tonsils and adenoids will show no visible changes. But the results of the operation are usually gratifying. Crowe was able to follow up and examine 366 patients operated on for cervical adenitis for six months to four years after tonsillectomy. His results are interesting: In 122 cases there was a complete cure; in 187 the remaining glands are not larger than peas; in 36 (less than 10 per cent) the glands are still enlarged. Our own results, though in a comparatively small number of cases, have been equally gratifying.

When we come to consider the second, the hematogenous group, we enter upon the large domain of focal infections. The obvious relation of tonsillar infections to systemic disorders has been observed for centuries. There are records of tonsillectomies performed by Celsus in the year 10 A. D. Capt. Catlin published a pamphlet in 1861 in which he contended that to enlarged tonsils and adenoids almost all the evils of mankind are attributable. It is only within the past few years, however, that a scientific basis for these observations has been arrived at, largely through the clinical work of Billings and his associates, working hand in hand with Rosenow, who has done an enormous amount of experimental work and thus established the former theory of focal infection upon a basis of actual facts. Time does not permit us to enter into a detailed discussion of the diseases which have been proven to be caused through a focus of infection, usually in the nasopharyngeal region. Suffice it to state that there are very many in this category, the etiology of which has hitherto been obscure, and that the number is being added to every day. We shall rather discuss the clinical results of this work, which interests us as practicing physicians.

In making a diagnosis as to whether or not the tonsils are responsible in a given case, we take into consideration (1) the history, (2) a thorough physical diagnosis including laboratory findings, (3) inspection, and (4) the bacteriology of the tonsils. In regard to the history, I shall only mention that, while the great majority of patients will have had one or more attacks of tonsillitis, in others no history of such attack is obtainable, and yet the tonsils may be distinctly diseased. A thorough physical diagnosis will

often reveal conditions that may considerably alter our course of treatment. There may be an advanced pulmonary tuberculosis or diabetes, which would contra-indicate tonsillectomy. If nephritis be present, the type should be accurately ascertained. In case of chronic pyelonephritis or glomerular nephritis we may hope for great results from a tonsillectomy, while with chronic interstitial or parenchymatous nephritis such an operation may do the patient more harm than good. Inspection of the tonsils is exceedingly important, and, if the patient be unusually sensitive or gags easily, it should be done under local anesthesia, swabbing the pharynx and particularly the posterior portion of the tongue with 10 per cent cocaine several times at intervals before examination. One should determine (1) the size of the tonsil, which will often be deceiving, and can best be done by grasping and pulling the tonsil out of its bed; (2) the position, for an embedded tonsil, even if small, is the most likely to give systemic trouble owing to its more intimate relation to the lymphatics and blood-stream; (3) the presence of adhesions and cicatricial tissue, from attacks of tonsillitis and peritonsillitis, or from former operations. A tonsil which has been previously only partially removed becomes far more dangerous than before, because the resulting cicatricial contraction over the surface prevents open drainage into the mouth, and forces it toward the blood-stream or lymphatics. The presence of one or several small circumscribed abscesses should be carefully looked for. These are very often found, especially on the lower posterior surface, and will be indicated by a small yellowish spot, which when opened will be found to contain pus. The final proof of the diseased condition of the tonsils will be found in studying the bacteriology. A long glass pipette is carefully inserted into the crypts, or into one of the yellowish spots if present. In a surprisingly large number of even normal-looking tonsils pus will be found which in culture will yield a streptococcus, most often of the viridans type.

Now, as regards the results of our operations, I wish to bring out a few points that are of interest. Why is it that, in so many cases, for example, of rheumatism, where we find very positive tonsils and hope for great results, even at times making the mistake of giving vent to our enthusiasm in the presence of the patient or his family, we are destined only to bitter disappointment? In this regard I believe the work of Faber is exceedingly important. He found that the joint of a rabbit could be sensitized by inject-

ing a small amount of killed streptococcus of a given strain into the joint cavity. After all local reaction has disappeared, intravenous injection of the minutest dose of the same strain will give rise to a definite arthritis in the joint sensitized. In control animals the amount injected will give no symptoms whatever. Furthermore, the joint reaction will not occur if any other organism is used, such as the pneumococcus, the staphylococcus, or the bacillus typhosus. Nor will it occur if any other strain of streptococcus is used. The organism used must be absolutely specific. From this we may conclude that, after a person is once sensitized through the presence of a primary focus in the tonsils or other location, the minutest secondary focus,—for example, in a lymph-gland—will be sufficient to keep up the infection. Furthermore, the longer a patient has been afflicted with his malady, the less can we hope from a removal of the primary focus. A striking example of this fact is to be found in the type of rheumatism which has been classified as "rheumatoid arthritis." We have all encountered these cases in our practice. The patient becomes afflicted with pain in various joints, usually beginning in the fingers or toes. The joints become swollen and painful, deformities result, new joints, sometimes even the spine, become involved until the patient becomes a helpless cripple. Crowe was able to follow up nine such cases for several years after tonsillectomy, in some of which definite tonsillar history and findings were present. I shall quote a part of his report on these cases. The lesson to be learned from it is clear. "Only two of the nine cases are improved. This improvement might be due as much to the general hygienic measures they have followed as to the tonsil operation. Two are not improved, but no new joints have become involved. Five of the nine cases are much worse. New joints have become involved and they are for the most part helpless invalids." There is little question but that, in these cases, we are face to face with the problem of the secondary foci, which still remains unsolved.

The importance of removing the tonsils with the capsule intact cannot be too strongly emphasized. Frequently we see cases of recurring tonsils, or, what is far worse, of pus pockets at the site of former tonsils which look innocent upon the first superficial examination, and which, however, will on bacteriological examination, be found to contain a streptococcus.

It is a mistake to think that tonsils may be removed with impunity upon a basis of suspicion

that they may be the cause of an otherwise obscure trouble. In many of these cases, where the nasopharynx seems to have been accustomed to depending on a functioning tonsil as a defense against infection the removal of the tonsils will institute a chronic pharyngitis and bronchitis. This is especially true if carious teeth or a chronic sinusitis have been overlooked, and are allowed to remain after tonsillectomy. Micro-organisms may pass intact through mucous membrane of the nasopharynx, and thus become a source of infection, which would be all the more feasible when nature's barrier had been removed.

I wish to emphasize the importance of supplementary treatment in all cases where tonsillectomy is performed for relief of systemic disorders. A case of glandular tuberculosis should have all the hygienic treatment that has been found to be of great value where tuberculosis in any manifestation is a factor. In chorea the patient should be put at absolute rest in bed for at least five weeks after tonsillectomy, and a course of arsenic given. And similarly, in glomerular nephritis, or in any other condition where tonsillectomy has been deemed indicated and performed, we should carry out any general measures within our power that may tend to increase the resistance of our patient.

The clinical significance of the tonsils is one of the greatest problems in medicine. Much has been done towards solving it, but there is still much to be done. Every day new facts are coming to light that seem to make the problem only deeper even while throwing some light on the hidden mysteries. Only within the past few months Rosenow has found that there is a definite relation between the tonsils and poliomyelitis. He states that in all cases of poliomyelitis in which he performed a post-mortem examination that there were abscesses of the tonsils from which the specific organism of the disease could be isolated. In our own work recently at the St. Luke's Hospital two cases of pernicious anemia have been studied carefully with regard to tonsillar infection. In each of these cases abscesses were found in the tonsils the cultures from which yielded a pleomorphic streptococcus, which, on intravenous inoculation into rabbits produced definite changes in the blood, the most striking being a large number of nucleated red cells and a marked eosinophilia.

In one case, a man 56 years of age, after preliminary treatment a splenectomy was done, followed later by tonsillectomy. The condition of this man remains fairly good; the tonsillectomy

does not seem to have altered the progress of the disease in one way or another.

The other case, a young man 26 years of age, had a typical rheumatic and tonsillar history, and a partial removal of the tonsils had been performed a year before. He did not improve satisfactorily under the usual treatment, that is, salvarsan and blood-transfusions. Following tonsillectomy, however, there was a marked change. The weight increased six pounds the first week and over fifteen pounds the first month, while the hemoglobin increased from 40 to 80 per cent. In fact, his condition was so much improved that splenectomy, which had previously been determined upon, was deemed unjustified, and he was allowed to go home. About three months later the patient returned to the hospital suffering from severe diarrhea and a marked acute nephritis. He was put to bed, and with appropriate treatment recovered from this acute attack. The hemoglobin had meanwhile decreased considerably, and a transfusion was attempted, but resulted in a violent reaction on the table in spite of a complete negative agglutination test. To our great surprise, however, his hemoglobin has continued to rise, and his general health to improve under ordinary tonic treatment.

It is too early, of course, to draw any conclusions regarding the ultimate results, but we may at least say that in this case the tonsillectomy seems to have affected the progress of the disease.

Similar striking examples might be mentioned both in our own experience and in that of others of cases which are often very strongly suggestive of tonsillar relationship.

It seems reasonable to assume that most of the failures are attributable to the presence of secondary foci, as suggested by the work of Faber and others, which still remain in an active or dormant state after the primary focus is completely removed, and that even a slight lowering of resistance is sufficient to reactivate these foci, resensitizing the patient and causing a recurrence of the symptoms.

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DISCUSSION

DR. M. E. TRAINOR (Williston): I was very much pleased with the paper that the doctor gave. I think he covered the subject very carefully, but there are a few things possibly that I wish he had gone into a little deeper. I would have enjoyed hearing him discuss whether the glands he mentioned were really tubercular infections or were ordinary infections. Enlarged cervical glands, as I have noticed in a great many cases in dealing with tonsils, are caused by extension of infection from the diseased tonsils. I thought possibly resolution would not have taken place as soon, had they really been tuberculous in those cases.

I have noticed in such cases that a large percentage of the tonsils that give the most trouble are embedded, and that the small embedded ones give more trouble than the large protruding kind. I presume that is because the embedded tonsils, being covered up by the pillars, are unable to get rid of their poisons as completely as the one that is not covered by pillars of the tonsil. The rheumatic cases, as the doctor states, heal up completely in most cases after the tonsils are enucleated.

Another condition is ear-trouble. Many cases of tubal catarrh and deafness are caused by chronic tonsillitis, and I have seen the same improvement in hearing as in other things mentioned after removing the trouble. So I have concluded that the best way to act in trouble with the tonsils is to operate if you can trace a definite amount of harm coming from the tonsils, regardless of the condition of the tonsil,—whether large or small. I believe the operation of choice is enucleation in the average case that we see, but I believe that every case of adhesion of the pillars to the tonsils should be loosened up as soon as discovered which generally makes further operative procedure unnecessary.

DR. OFTEDAL (closing): I just want to mention that, in regard to details of a subject of this kind, it is difficult to hold a paper down to the time limit, and for that reason many things have to be left out that must be considered obvious and more or less familiarly known to all of us.

Now, there is just one more thing I want to mention in regard to the functioning of the tonsils. This has been brought to my attention during the past week by the report of Drs. E. C. Rosenow and C. L. V. Hess on an epidemic of septic sore throat occurring in Galesville, Wis., in March of this year. In this city of about a thousand population over a third of the inhabitants contracted the disease. It was noted by the investigation that those in whom the tonsils had been previously removed were affected very mildly, or not at all, by the infection. This striking fact would seem to point directly to a relation of the tonsils to the process of absorption of the septic material. The tonsils, in their effort to eliminate the infection by their phagocytic function, become themselves infected through the high virulence of the organisms, and thus become a factor in the spread of the infection to the surrounding structures, instead of acting as nature's means of defense. In such a case, the complete absence of the tonsils would, of course, be less harmful than their presence, especially when functionally weakened by chronic inflammatory changes.

DR. E. A. PRAY (Valley City, N. D.): I desire to ask Dr. Oftedal what results he has had with circumcision of the tonsils?

DR. OFTEDAL: In our work at St. Luke's Hospital we always do a complete removal of the tonsillar tissue by careful dissection. I have had no experience with the operation of circumcision. I consider the complete removal of the tonsil as a prime factor in the success of the operation.

THE THERAPEUTIC USE OF PROTEIN MILK*

By C. A. SCHERER, M.D.

FARGO, NORTH DAKOTA

The years have marked a constant modification of our ideas of infant-feeding. Since 1880 this change, more marked during the last decade, has led away from a persistent but vain attempt to imitate mother's milk by the modification of cow's milk. While it is possible to simulate mother's milk very closely by changing the proportions of the food elements in cow's milk, it is a useless labor, for the basic fact remains that woman's milk is intended for the baby and cow's milk for the calf. The result is, that at present the interest of the pediatricist is centered upon the classification and treatment of nutritional disturbances.

With the more recent attempts at the classification of disturbances of nutrition in infants,

according to their etiology and clinical symptoms, new theories of feeding have been evolved, among which the introduction of protein milk by Finkelstein and Meyer¹ seems to be the greatest departure from the older methods of treatment of intestinal diseases. It must be understood, however, that no method of feeding can be successful unless we know the etiology of the primary disturbance. Finkelstein and Meyer originally recommended the use of the food in those disturbances which they classify as decomposition and alimentary intoxication.

The principle of the food, according to its authors, is based upon the attempt to limit the injurious fermentation processes in the intestine, first, by reducing the lactose content of the food to the minimum; second, by the dilution of the whey, which improves the tolerance of the metab-

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

olism for sugar; and, third, by the addition of large amounts of casein and other milk proteins which neutralize the acidity of fermentation by the production of alkali. Casein, in a finely divided state, may be fed in quantities of fifteen to twenty grams per day, and is harmless for even very young infants. More recent investigations, notably those of Holt and Levene² and of Bosworth and Bowditch³ have demonstrated that it is not only harmless, but of actual benefit. The nitrogen balance is maintained in very young infants, and Heubner and Rubner found that 83.2 per cent was absorbed in a child of nine weeks.

Many variations of the original method of making the protein high mixture have come into vogue during the last few years, but for general use the method of Finkelstein and Meyer, as described in Feer's text-book of Pediatrics,⁴ is very satisfactory. Any mother can easily be taught to make this mixture. The great difficulty lies in getting a soft, finely divided curd. A quart of fresh whole milk is clotted with essence of pepsin at body temperature. If the milk is too hot (over 104°F.) the curd becomes very tough and leathery. After removing the whey by draining through a cheese-cloth sack for a half hour, the curd is rubbed through a milk strainer. This mass is then suspended in a quart of equal parts of buttermilk and water by means of a little flour. Other carbohydrate additions are made after the mixture has been boiled. In order to keep the flakes of curd from becoming lumpy during the process of boiling, it is essential that the mixture should be stirred constantly and energetically. The authors at first used the mixture without carbohydrate addition, but later recommended the addition of 2 per cent dextrimaltose, which is to be increased as rapidly as possible to 5 per cent. The mixture without carbohydrate addition has a food value of about 450 calories per liter, and contains about 3.5 per cent protein, 2.5 per cent fat and 0.75 to 1.00 per cent lactose.

The advantages of the treatment with protein milk lie in the fact that it is possible to give sufficient quantities of food much more rapidly than by any other method without causing a recurrence of the fermentation. This does away with the danger of inanition, and hastens repair. The diarrhea disappears almost at once, and the stools become formed within twenty-four to forty-eight hours. The typical stool with protein milk is the so-called soap stool, which is formed, white, glistening, and of alkaline reaction.

It is rarely necessary to give the food longer than six weeks, while Stooss⁵ finds that two weeks is often sufficient. Longer periods of protein milk feeding are not harmful, but the infant does not gain as rapidly as on other food mixtures. As soon as the disturbance for which the protein milk was given has subsided, the child is put on a more simple milk mixture, such as oatmeal water and milk in varying proportions. This change should not be made gradually, but at once. If the simpler food is not taken care of, or if there is a return of the diarrhea, the patient may again be put on the protein milk.

Some infants fed on protein milk show an obstinate constipation. This is usually a sign of underfeeding, and may be relieved by increasing the quantities of food. Some authors recommend the use of malt soup extract in place of the dextrimaltose. This also has a tendency to overcome the constipation. As to the quantities: in cases of beginning decomposition, it is recommended that, after a twelve-hour starvation period, 300 c.c. (10 oz.) of the food with 2 per cent additional carbohydrate be given in five feedings in the twenty-four hours following. Then, without regarding the consistency of the stools, the amount of food is rapidly increased to 180-200 c.c. per kilo (2.5 to 3.5 oz. per pound of body-weight), but not more than one liter (one quart) is to be given in twenty-four hours. As soon as the bowel movements have become less frequent, the carbohydrate is increased to 5 per cent. This should be done within eight to ten days. Later, 1 to 2 per cent of flour may also be added. In cases of intoxication (the cholera infantum of older classifications) we begin with a shorter starvation period followed by one-third to one-half ounce of food every hour. Here again the increase must be as rapid as possible to avoid all danger of starvation. As the quantity is increased, the number of feedings is gradually decreased until the child is taking about six ounces every four hours.

In feeding protein milk as a therapeutic agent, the increase in the quantity of food must be rapid in order to avoid further inanition and resultant aggravation of the child's condition. The carbohydrate increase must also be rapid, and must be brought up to 5 and even 8 per cent. The quantity of food, and especially of the carbohydrate addition, should not be reduced if the stools do not improve, nor should such reduction be made if diarrhea or a slight rise in tem-

perature occurs. When the weight falls very suddenly, and severe diarrhea recurs, it may be necessary to repeat the starvation period, and the smaller quantities of food, but then, again, the increase to the full requirement must be even more rapid than before. Such accidents in the course of the treatment are more commonly due to infection than to alimentary processes.

We do not intend to recommend the use of protein milk in cases where mother's milk is obtainable, and all the conditions in which its use is recommended respond even more rapidly to mother's milk. Lichtenstein,⁶ reporting experiences with 70 cases, finds that the food may be successfully given as an addition to breast milk; Aschenheim,⁷ using the mixture in enteral and parenteral infections, reports very good results; Gellhorn,⁸ reporting observations on 163 infants, summarizes his paper by saying: "Protein milk may be used as an addition to breast-feeding and in cases of very young infants that must be weaned suddenly. The food cannot replace woman's milk in the severest cases, but will be found of greatest assistance in the majority of cases in private practice."

After two years of experience with protein milk in hospital work, I have used it in 20 cases in my practice during the past year, and I append the histories of three typical cases.

CASE 1.—Baby M., aged 8 months, male. Present complaint: diarrhea, restless, and peevish. Family history: negative, one other child, aged 4, always been strong. Patient's history: birth normal, no injuries. Breast-fed for two months, then mother had to undergo operation, and the baby was taken from the breast. Various feeding mixtures have been tried since this time. No history of acute disease. Present illness: four weeks before we saw the baby it had an acute digestive disturbance characterized by diarrhea, vomiting, and temperature up to 103°. In treatment of this the infant had been given one teaspoonful of castor oil in twenty-four hours and starvation, and was then put on barley water of unknown percentage with bismuth and paregoric to control the diarrhea. Present findings: well-developed child for its age; color, pasty and gray; turgor, greatly reduced; weight, 12.6 lbs. Examination: head,—fontanel open about two finger-breadths; no craniotabes; glands in posterior triangle of neck. Chest, negative. Abdomen, distended and tympanitic.

Spleen, not palpable.

Umbilicus, prominent.

Genitalia, negative. Extremities, hands and feet, swollen and pitted on pressure. Reflexes, greatly increased; slight carpopedal spasm. Eyes, dull and sleepy.

Ears, negative. Mouth, gums swollen and dark-red, evidently painful when nursing.

Throat, reddened.

Stools, the child passed five to twelve watery stools in twenty-four hours. These passages were dark with bile, and contained much mucus.

Diagnosis: Flour-feeding injury (Czerny and Keller), and beginning scurvy (Barlow's disease).

Treatment, orange juice, 1 teaspoonful, t. i. d. Castor oil, oz. ss, followed by water for twelve hours. Then protein milk, sugar 3 per cent, 3 oz. every four hours.

Subsequent course: In two days' time, the bowel movements showed the characteristic soap stool of high protein, and their number was reduced. The amount of food and its sugar content rapidly increased.

At the end of the first week the baby weighed 13.2 lbs., and was taking 6 oz. protein milk, sugar 5 per cent every four hours. At the end of the second week, the bowel movements had become normal and the child slept well and was not so peevish; weight, 13.5 lbs.

The infant was now placed on a simple milk mixture with a higher carbohydrate content, and when seen last had gained 25 lbs.

CASE 2.—Baby D., aged 5 months, female.

Present complaint: failure of development.

Family history: adopted child; history not known.

Patient's history: was breast fed for six weeks, stopped because taken from mother. Mellin's food for one month; for past few weeks has been having equal parts cow's milk and water with brown sugar. Fed every two hours, receiving 6 oz. per feeding (2 qts. per day).

Present condition: after being removed from breast, the child had diarrhea until present time; has three to five movements per day; stools are liquid and vile-smelling. Child has had alternating periods of diarrhea and constipation, and passes huge stools at times. Baby does not sleep nights, and is restless and irritable during day. Always hungry. Present findings: small infant, poorly developed, has typical old-man expression; color, bad; turgor, very poor. Except for extreme emaciation, the physical findings were negative; child cried freely and was very active during the examination; weight, 10.5 lbs.

Urine, negative. Stools: stool brought to office by mother was copious, vile-smelling, contained many shreds of mucus, and was dark-green. Diagnosis: Decomposition. Treatment: protein milk with 3 per cent dextrimaltose, giving 6 oz. every four hours. Subsequent course: After one week, weight 10.2 lbs.; feeling better; sleeps all night; four bowel movements in twenty-four hours; characteristic soap stool. Second week, weight the same, one bowel movement in twenty-four hours; child quiet and well behaved. Third week, weight, 11 lbs.; put on simple milk mixture containing six per cent sugar; one bowel movement per day for last three days; slight amount of mucus. Fourth week, child weighs 11.6 lbs.; seems perfectly well and happy.

CASE 3.—Baby E., aged 10 months; male.

Present complaint: diarrhea.

Family history: negative; two older children; both well.

Patient's history: birth, normal, weight, 8.5 lbs.; breast-fed for six months; no trouble; weight, 17 lbs.; then fed proprietary food milk-mixture according to directions on the label. Did well. No acute diseases. Present condition: One month ago the child developed sudden diarrhea; was well in evening, and the

next day had five bowel movements of very bad odor. Child passed much gas; very restless, and seemed in pain. Grew steadily worse, having from twelve to fifteen bowel movements per day; was given castor oil and some small pills. Diarrhea stopped, but recurred in about a week. Treatment was repeated, and weaker milk mixture recommended. At present has four to eight bowel movements per day, sour odor and fermented.

Present findings: large child; body well formed. Color, pasty gray; turgor, greatly reduced; skin has putty-like feel; weight, 18.4 lbs.; head and chest, normal; temperature, 101.2°. Examination, negative except abdomen, which was greatly distended and tympanitic.

Urine: few hyaline casts, trace of albumin. Stools: Child passed five stools yesterday; specimen seen was small in amount, watery, and contained much bile-stained mucus. Diagnosis: decomposition (Finkelstein's classification). Treatment: Castor oil, oz., ss; water for twenty-four hours; protein milk with 2 per cent dextrimaltose, giving 4 oz. every four hours; increased in forty-eight hours to 6 oz. every four hours.

Subsequent course: Child immediately became constipated, and was given castoria. The bowel movements after this were still watery, and contained mucus. After one week the typical soap stool appeared, but the child was constipated. To relieve this the quantity of food was increased and the dextrimaltose raised to 8 per cent. After the second week the child was put on milk mixture, and by the end of the third week had a relapse, the same condition as before appearing. Protein milk was again ordered, and continued for six weeks. Baby is doing fairly well; weight, 19.3 lbs.

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DISCUSSION

CHAIRMAN: As Dr. Brandt is not present to open the discussion, I will ask Dr. Sedgwick to open it.

DR. J. P. SEDGWICK (Minneapolis, Minn.): As I was in the back part of the room when the paper was read, I was unable to hear all of it, but I believe that, from a pediatric standpoint, this paper is an event in North Dakota. Unless I am mistaken this is the first paper presented before this Association by a North Dakota pediatricist. From a pediatric standpoint that is really an event, and I wish to say that Dr. Scherer is a member of the Northwestern Pediatric Society, and has worked with us in Minneapolis. We know his work abroad and here, and I think we are very fortunate to have him deliver a paper like this, because we need as many pediatricists as we do eye, ear, nose, and throat men.

DR. L. G. SMITH: I want to ask Dr. Scherer whether in mild cases we do not get a great deal of benefit from plain skimmed milk. I know that I have used it a little, and have had very good results in a great many instances, because we certainly find that it is very difficult for a great many mothers to make the protein milk. I just want to know if you use it in some of the milder cases where it is hard to get a mother to make the protein milk.

DR. SCHERER (closing): The objection to skimmed milk in the early cases would be that these cases might be due to lactose fermentation, and the result with the high amount of lactose in the skimmed milk might aggravate the condition. The high protein content of the mixture is intended to relieve the toxicity due to excessive acidity, and to prevent further fermentation of lactose because the mixture contains only 0.75 to 1 per cent of this sugar.

I would like to add that, while the argument is very applicable, protein milk must be carefully made. The average mother, when her child gets to the stage where in the mixture is to be used, is willing to do almost anything, and, with just a little instruction from the doctor or a nurse that has seen the mixture made, I have had no trouble at all in getting the mother in the home to make the milk, even though not a good cook. Care should be taken not to overheat it, and get a fine mixture by constant heating.

COMPARISON OF THE GERMAN AND THE AMERICAN CLASSIFICATIONS OF ALIMENTARY DISTURBANCES

By M. SEHAM, M. D.

MINNEAPOLIS

At the present time the following are the three most widely accepted classifications of alimentary disturbances:

1. That of Czerny and Kellar, of Berlin, who are known especially for their work "Exudative Diathesis."

2. That of Finkelstein and Meyer, of Berlin, who are best known on account of their study

of disturbances caused by irrational or excessive feeding.

3. The Boston, or so-called American, classification of Rotch and Morse, which is characterized by the emphasis given to infectious diarrhea as a specific entity.

Upon first looking over these classifications (Table I), one may be somewhat confused by

the large number of terms and the difference in the arrangement of the groups, but, upon careful review, one is assured that these differences, whatsoever they may be, are largely differences of terminology and philosophy, which, as regards the practical feeding of alimentary disorders, are relatively unimportant.

TABLE I.

I. CZERNY AND KELLAR

- A. *Disturbances of Nutrition Ex Alimentatione*:
 - a. Disturbances due to overfeeding with cow's milk.
 - b. Disturbances due to overfeeding with carbohydrates.
 - c. Barlow's disease.
- B. *Disturbances of Nutrition Ex Infectione*:
 - a. Acute disturbances of nutrition:
 - (1) Toxicoses.
 - (2) Intoxications.
 - b. Enteral infections:
 - (1) Sepsis neonatorum.
 - c. Parenteral infections.
- C. *Disturbances of Nutrition Ex Constitutione*: (*Inborn, chemical, abnormal metabolism.*)
 - a. Exudative diathesis.
 - b. Rachitis.
 - c. Anemia.
- D. *Alimentary Disturbances Due to Congenital Defects*:
 - a. Hirschsprung's disease.
 - b. Malformations.

II. FINKELSTEIN

- A. *Alimentary Disturbances Due to Transgression of Limits of Tolerance*:
 - Light forms with no destructive process:
 - a. Disturbance of balance.
 - b. Dyspepsia.
 - Severe forms with destructive process:
 - a. Decomposition.
 - b. Intoxication.
- B. *Alimentary Disturbances Due to Deficient Feeding*: (*Inanition*)
 - a. Quantitative inanition.
 - b. Qualitative inanition (carbohydrate).
- C. *Secondary Alimentary Disturbances Due to*:
 - a. Primary diminution of tolerance.
 - b. Infection.
 - c. Heat injury.

III. ROTCH AND MORSE

- A. *Indigestion*:
 - a. Excess of food.
 - b. Excess of individual element in food:
 - (1) Fat.
 - (2) Carbohydrates.
 - (3) Protein.
 - (4) Salts.
- B. *Malnutrition (atrophy)*.
- C. *Indigestion with Fermentation*.
- D. *Nervous Indigestion*.
- E. *Infectious Diarrhea*.
- F. *Rachitis*.
- G. *Barlow's Disease*.
- H. *Congenital Defects*.

With our present knowledge or, rather, with our present lack of knowledge, of intermediate metabolism, with the data collected from scientific investigations so subject to change, and with the diversity of opinion upon subjects relating to metabolism, these classifications must necessarily be somewhat academic. Not until the laws governing intermediate metabolism shall have been permanently established, shall we have a criticism-proof classification of alimentary disturbances.

In considering these disorders in infancy, which are dependent directly or indirectly upon food-ingestion, there are three large groups: (1) those conditions in which there is an injury to the entire organism, caused by one or all of the elements in the food, due to an excessive or an irrational food supply; (2) those condi-

TABLE II.

COMPLETE CLASSIFICATION OF ALIMENTARY DISTURBANCES

- I. *Diseases of Nutrition Due to Irrational or Excessive Food Supply*:
 - A. *Disturbance of Balance*: (*Finkelstein.*) (*Synonyms*)
 - 1. Overfeeding with cow's milk. (Czerny.)
 - 2. Indigestion:
 - (a) From excess of food. (Morse.)
 - (b) Fat.
 - (c) Carbohydrates (chronic).
 - 3. Protein. (Morse.)
 - 4. Salts. (Morse.)
 - B. *Dyspepsia*: (*Synonyms*)
 - 1. Acute carbohydrate. (Czerny and Morse.)
 - 2. Acute fat. (Morse.)
 - 3. Acute protein. (Morse.)
 - 4. Acute salt. (Morse.)
 - C. *Decomposition*: (*Synonyms*)
 - 1. Athrepsia. (Morse.)
 - 2. Marasmus. (Morse.)
 - 3. Atrophy. (Morse.)
 - 4. Chronic intestinal indigestion. (Holt.)
 - D. *Intoxication*: (*Synonyms*)
 - 1. Toxicosis. (Czerny.)
 - 2. Indigestion with fermentation. (Morse.)
 - 3. Cholera infantum. (American.)
- II. A. *Disturbance of Nutrition Due to Infection*. (*Primary or secondary.*) (*Synonyms*)
 - 1. Infectious diarrhea—primary:
 - (a) Enteritis. (Finkelstein.)
 - (b) Gastro-enteritis (old term). (American.)
 - 2. Toxicosis. (Czerny.)
 - 3. Enteral infections—sepsis of newborns. (Czerny.)
 - 4. Parenteral infections. (Czerny.)
- III. A. *Nutrition Disturbances Which Are Constitutional*. (*Etiology unknown.*)
 - 1. Rachitis.
 - 2. Barlow's disease. (Scurvy.)
 - 3. Exudative diathesis. (Czerny.)
 - 4. Nervous diathesis.
- IV. A. *Congenital Defects*:
 - 1. Hirschsprung's disease.
 - 2. Malformation.

tions which arise from the influence of bacteria, directly or indirectly; and (3) those disorders in which there is an inherently reduced chemical intolerance of the tissue cells towards one or all of the elements of the food.

The disorders in Table I are very clearly and definitely discussed and differentiated in Finkelstein's classification. Group I, A, "Disturbance of balance": In this condition there is an injury to the tissues which retards the growth and which interferes with the normal absorp-

tion; the weight curve becomes irregular (sometimes there is a slight gain, generally there is a loss); increase in the strength of the food, especially of the fat, may cause loss of weight; symptoms most commonly point to fat intolerance; one of the most constant signs is the presence of hard, dry, yellowish-gray stools, which crumble up easily and, upon examination, are found to contain from five to ten times the normal amount of calcium and magnesium salts, especially of the fatty acids. This disorder is the equivalent of A, a, in Classification I, and of A, a and b, in Classification III.

Sometimes the stools contain an excess of neutral fats and fatty acids. If this condition is not treated, the child becomes worse, and there may be an acute precipitation into the second stage, which is known as *dyspepsia* (II, A, b). According to Finkelstein, dyspepsia cannot occur without disturbance of balance as a forerunner, so that dyspepsia is just a second stage in the loss of tolerance to food.

There may be three kinds of dyspepsia: (1) fat; (2) sugar; (3) starch. The symptoms of this condition point to a local irritation. There may be slight temperature, diarrhea, and green stools with mucus. These stools may contain many "fat curds," or starch may be present. Vomiting often accompanies the diarrhea. This is the equivalent of A, a and b, in Classification III.

The last two conditions of this group, decomposition and intoxication, cannot occur without one or more attacks of the two previous conditions; in decomposition the tolerance to food is greatly reduced; here there are probably chemical changes in all the tissues throughout the body, which cause a smaller and smaller amount of food to be metabolized, and in which there is so great a loss of tolerance that any attempt to increase, for example, the fat in the food, causes a severe untoward reaction. The increased reduction in the power of assimilation in this condition is due to the fact that with the loss of weight there is a great loss in the minerals, the presence of which is necessary for normal metabolism, and the absence of which produces severe functional changes. The loss in weight is rapid; and the temperature, as a rule, is subnormal and irregular. The stools are soapy, and not only has the absorption of fat been greatly reduced, but the tolerance to carbohydrates also begins to suffer and salt

metabolism is also affected, as is shown by edema.

This condition is the equivalent of atrophy or of marasmus, formerly called "chronic gastrointestinal indigestion."

The next and last stage of alimentary intoxication is the climax of the accumulative injuries from the three preceding conditions. This condition is the terminal stage of alimentary disorders. It is very serious, and the symptoms are quite constant. They are (1) very high fever, which recedes upon withdrawal of food; (2) leucocytosis; (3) markedly rapid loss in weight; (4) glycosuria; (5) nervous signs, from coma to convulsions; (6) hyperpnea; (7) a "far-away" expression; and (9) severe diarrhea. This is analogous to "indigestion with fermentation" in Classification III, and to the condition 1 and 2, under B, in Classification I.

Finkelstein believes that the cause of this condition is some chemical irritation by the minerals in the whey, but this is not definitely proved. Czerny believes that the same condition is caused by bacterial decomposition of food.

To sum up, then, this group of cases, which covers the majority of the practical problems of infant-feeding, is the result of inadequate or irrational feeding. Nutritive disturbances cause an injury to the body as a whole, but especially to those tissues concerned in nutrition; and these injuries give rise to weakened functions, the principal manifestation of which is intolerance to food.

Group B and Group C of Finkelstein's Classification, need no discussion.

The Classification of Czerny and Kellar is distinctive because of two conditions: "Exudative diathesis," (a in Group C,) and "parenteral infections," c in Group B.

This condition is an inherently abnormal chemical state in the tissues. The term "scrofula," which formerly included many conditions which were proved to be non-tuberculous, has been overthrown, and the new term is used instead. The term "exudative diathesis" describes, in itself, the pathology which is present. The mucous membranes of the respiratory and gastrointestinal tracts are much more commonly affected in these children than in the others.

Czerny thinks that the loss of tolerance in the children affected with this condition, is dependent upon the loss of tolerance to fat. Skin manifestations show as seborrhea of the scalp, eczema of the face, strophulus, intertrigo, and

erythroderma. Undoubtedly, this condition is a distinct, constant disease entity, and must be differentiated from all of the other conditions which have similar symptoms.

Barlow's disease, or scurvy, (C in Group I), cannot be classified as yet, because we do not know its etiology; the same is true of rachitis (F in Group III and in C, b, Group I). Anemia (C in Group I) is only a symptom, and should not, therefore, be grouped as a disease.

There are two things in Group III which distinguish it from the others: (1) a finer attempt to differentiate between one element and another as the possible cause of the disturbance: (2) the establishment of infectious diarrhea as a primary infection of the intestinal tract.

In indigestion from excess of food, and all its subheads, it is not necessary to go into a detailed discussion regarding the symptomatology, because it is practically no different from the other analogous conditions mentioned in the other classifications. Although in some conditions one can find, quite definitely, some one element, such as fat or carbohydrate, to be the definite cause of the alimentary disturbance, yet in the majority of instances this distinction does not obtain. In this Group, under Indigestion, each of the subgroups may be divided into acute and chronic. The acute fat indigestion, if it is severe, is the equivalent of the so-called "Biedert's fat diarrhea." In fat diarrhea there is what may be called an acute fat blow-up: there are suddenly a great loss of fluid, and severe diarrhea, in which the stools assume a Nile-green appearance, which means a great loss of sodium and potassium salts. This is a very serious condition, and, if the fat is not completely withdrawn, the condition is fatal.

Some authorities deny the existence of protein indigestion. The symptoms of this condition are vomiting, flatulence, colic, and stools which contain the typical protein curds, which are tough, large, and bean-shaped.

As to the part salts play in nutritional disturbances: it is difficult, at the present time, to determine whether certain symptoms are due to lack of salts or improper proportion of salts in the food, or whether these signs of apparent salt

disturbances are due to intolerance to one or all of the elements in the food. We know that removal of salt from the diet causes loss of weight, and also that salt may have an effect on temperature.

Indigestion with fermentation is a condition which, when mild, is similar to acute carbohydrate disturbance, as mentioned by Finkelstein; when severe, it simulates the condition known as alimentary intoxication. The symptoms point mainly to an acute carbohydrate disturbance. The gas bacillus has been associated with this condition as an etiologic factor.

Infectious diarrhea is undoubtedly here to stay. It was first established by the Americans. It is most commonly confused with indigestion with fermentation. Infectious diarrhea is a primary infection of the intestinal tract. There are nearly always definite pathologic lesions found, from slightly catarrhal inflammation to severe ulcers. The organisms are isolated in between 80 and 85 per cent of the cases; most commonly the Flexner dysentery bacillus is found; less commonly the Shiga, streptococcus, colon bacillus, and pyocyaneus. In infectious diarrhea the temperature is not so definitely affected by the withdrawal of food; while in indigestion with fermentation the temperature drops to normal, or nearly to normal, within twenty-four hours after the withdrawal of food. In the former condition the seat of the trouble is in the intestinal walls, while, in the other condition, the seat of the trouble is in the intestinal contents.

In indigestion with fermentation the stools are greenish, watery, and sometimes contain starch granules. They may also have mucus, and are foamy. In infectious diarrhea the stools contain pus and blood and Gram-negative short bacilli, which, very often, are found to be Flexner's dysentery bacilli. In infectious diarrhea there is leucocytosis; in indigestion with fermentation, as a rule, there is not.

In the practical use of the above-described classifications, one should bear in mind the fundamental principle of tolerance, the importance of differential diagnosis between one condition and another, and the fact that each infant is peculiar and individual in its reaction to food.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

W. A. JONES, M.D., EDITOR

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

SEPTEMBER 1, 1917

MUNITION-WORKERS

The London Letter in the *Journal of the American Medical Association* for August eighteenth is really a résumé of the report of the government committee on health of munition-workers, but the data at the disposal of the committee are not yet complete enough to warrant a final judgment, particularly as to the hours of labor and their relation to the output, as well as the well-being, of the employees. The report showed, however, that a marked reduction of the working hours was associated with an increase of production, both relative and absolute. It required some time, however, to reach this equilibrium, and, not infrequently, changes both up and down were noted during the time of the committee's investigation.

It must be remembered that in munition-shops a large number of women are employed, and they are employed sometimes at heavy labor. It was shown in one instance that when the actual working hours were 66 per week, and the nominal hours 74.8, the relative hourly production was 100, and the relative gross production was 100. In another instance, however, when the workers employed 54.8 hours and were nominally work-

ing 58.5 to 66 hours, their hourly production was 134 and their gross production was 111. Later it was found that with actual working hours of 45.6 and nominal working hours from 49.5 to 58.5, the hourly production was 158 and the gross production 109. It is to be inferred, therefore, that, if these women could work uniformly a nominal 50 hours a week, their gross output would have been as large as when they were working a nominal 66 hours, and considerably greater than when they were working a 77-hour week. This shows that considerable addition to the leisure of the operatives would substantially increase the total output of the factory. Rest from work on Sunday is followed by a relatively low output on Monday, but this output steadily rises in the course of the week, owing to increased efficiency produced by practice. The same old story over again, and illustrated by the commonly known Presbyterian "Blue Monday." The people who work uniformly and steadily through the week, and then give themselves up to utter relaxation on Sunday, rising later, eating more, stuffing themselves at all hours, and getting little or no actual exercise, show their toxic state the following day. Hence it is not the religious aspect which makes them blue on Monday, but the breaking up of normal habits, the change in their calories, and the indifference to necessary daily activity. If people would change their methods on Sunday,—eat less and exercise more,—they would be in better trim for the following day, but it is very hard to change the custom of centuries, and yet it is a well-known fact that uniform work, carried on seven days a week, under proper restrictions, allowing definite time for leisurely employment, exercise, or recreation, is much better than six days' work with an abnormal Sunday thrown in between.

The condition of munition-workers is not different from that of other workers except that, it has been found, if there is too much work loaded onto these people, they demand, and in some way seek and gain, a stimulation, consequently overwork at high speed increases the temptation of the individual to habits which are detrimental to health. It is commonly known that among munition-workers some bad habits have already been formed. Nitroglycerine and other chemical products go to make up cordite, the chewing of which has become a habit among a certain type of workers, and this craving for stimulation induces over-stimulation, and with it mental and nervous disorders. It is interesting

to note in one factory in the United States where aeroplanes are made that the company finds that better work is done by having four shifts of workers, six hours each. The factory is run night and day, but with a new set of workers every six hours.

THE STATE SANITARY CONFERENCE

The Minnesota State Board of Health has revived, or attempted to revive, this year the State Sanitary Conference. The meeting will take place in St. Paul, at the St. Paul Hotel, the day and evening before the State Medical Association convenes. There are so many problems now in which sanitation is the predominant note that the health officers throughout the state and others interested in sanitary measures will probably be glad to attend this sanitary conference. Doubtless many papers will be presented bearing upon camp and war problems, and, incidentally, they may be applied to other camps, such as lumber-camps and camps for other purposes. With all the new concentration-camps or training-camps that are springing up all over the country, there is evidently much that must be foreseen. The selection of sites for buildings and tents is a very important problem, and there has been some criticism offered that, for some strange reason, impossible sites have been chosen for the establishment of training-camps, but perhaps such choice is made with full knowledge of the situation and the necessities demanded at that particular spot.

At all events, some camps will be located at distant regions, and many of them will be in hot climates. Some of them already have been located far from a water supply, instead of on the banks of a river where the soldiers might bathe their sweaty bodies. Then, too, some consideration must be given to the soil about the camp, the possibility of sand rather than of a clay soil, for in a sand soil the drainage is rather apt to be good, while in a clay region rains make the soil sticky and slippery, and not infrequently flies and jiggers and mosquitoes abound more than in sandy areas. It seems reasonable to assume that a site might be found where practically all conditions necessary for hygienic existence are within reach,—that is, elevations, some shade, water supply of good quality and near at hand, bathing facilities within easy access, and everything of that sort. An unfavorably located camp does not appeal to the average medical reserve officer, but perhaps if he studies the situa-

tion more carefully he will find that for some good reason every place has been selected, or he may find, after he has joined the camp and gone through the training, that another place might be much more comfortable and sanitary. At all events, whether this subject is discussed at the Sanitary Conference or not, the meeting of the health officers will bring out many interesting, suggestive health problems, which will make the Conference a valuable introduction to the meeting of the State Association.

MORTALITY STATISTICS ON TUBERCULOSIS IN 1918

The Bureau of the United States Census is making elaborate plans to obtain and publish valuable—yes, indispensable—mortality statistics on tuberculosis for the year 1918.

The point upon which the Bureau lays special emphasis is the occupations of all decedents from tuberculosis in the year 1918. No physician need be told that such information has an inestimable value, that it is fundamental in any effort to stamp out tuberculosis, and that it is readily obtainable from no other source than physicians.

No certificate of death from tuberculosis made out in 1918 should fail to give the exact information sought by the Bureau; and of course we know the information will be cheerfully and fully given by every physician in America, if many of them do not *forget* it. This notice is written "lest you forget."

BOOK NOTICES

SOME PERSONAL RECOLLECTIONS OF DR. JANEWAY. By James Bayard Clark, M. D. New York and London: G. P. Putnam's Sons, 1917. Price, \$1.00.

Dr. Clark's recollections of Dr. Janeway will be especially interesting to the students of this very eminent man. All such students honored and loved Dr. Janeway, and all of them were enriched by even the slight association that comes from class-room work with a great man.

CLINICAL AND LABORATORY TECHNIC. By H. L. McNeil, A. B., M. D., Adjunct Professor of Medicine and Instructor in Physical Diagnosis, University of Texas Medical School, Galveston, Tex. Illustrated. St. Louis: C. V. Mosby Company. 1916. Price, \$1.

This very practical manual gives all necessary detail in a short and concise form. It seems particularly useful for anyone who is conversant with the various tests and examinations, but is not doing them often enough to remember all the details.

The work is all the author claims for it. —LAJOIE.

NEWS ITEMS

Dr. F. H. Schaaf has moved from Hartland to Minneapolis.

Dr. J. W. Powell has moved from Webster, S. D., to Sisseton, S. D.

Dr. E. L. Armstrong has moved from Park Rapids to Browerville.

Cokato has raised \$8,000 of the \$11,000 required for its new hospital.

Dr. W. S. Chapman has moved from Alexandria, N. D., to Mellette, S. D.

The Renville (Minn.) County Commissioners have appropriated \$2,000 for a county nurse.

Dr. J. F. D. Cook, of Langford, S. D., has returned from postgraduate work in New York.

Dr. C. A. Durnin has returned to Westhope, N. D., after a year's absence at Pasadena, Calif.

Dr. Simon D. Lund, of Dawson, has become associated with Drs. Lee & Westby, of Madison.

Dr. A. J. McCannel, of Minot, N. D., a captain in the Medical Reserve Corps, is now located in Honolulu.

Dr. M. O. Oppegaard, of Minneapolis, was married last month to Miss Hazel Minier, of Flandreau, S. D.

Dr. T. A. Durnin, of Saskatoon, Canada, has entered into partnership with Dr. A. R. Mackay, of Bottineau, N. D.

Dr. Alfred J. Willitts, of Missoula, Montana, has been appointed chief of staff of St. Ann's Hospital, of that city.

Dr. W. C. Aylen has moved from Litchville, N. D., to Mandan, N. D., and entered into partnership with Dr. H. O. Altnow.

Dr. C. H. Pierce, of Menagha will have charge of Dr. Paul Kenyon's practice in Wadena during Dr. Kenyon's absence in the war.

Dr. Justus Ohage, head of St. Paul's Health Bureau, has ordered that all weeds on vacant lots be cut in order to prevent the spread of pollen.

Dr. John D. Freeman, an old-time physician of Minnesota, who practiced at Pine Island in Civil War times, died last month in Kansas City, Mo.

Dr. P. A. Nestos, of Minot, N. D., has been appointed a Soo Railway surgeon, succeeding Dr. A. J. McCannel, who is a member of the Reserve Corps.

The medical societies of Montana with a membership of 320, covering a territory approximately 150x600 miles, have given 48 physicians to the Medical Reserve Corps.

Dr. D. Frederick Grass, a graduate of the Medical School of the University of Minnesota and of Rush, died last month in Chicago, where he had practiced since 1902.

Dr. Charles E. Hood, of Drayton, N. D., has purchased the practice of Dr. M. B. Halldorson, of Souris, N. D. Dr. Halldorson goes to Winnipeg to enter upon special work.

The business men of Jamestown, N. D., are raising funds with which to purchase Parkview Hospital of that place and put it under the management of the Sisters of St. Joseph.

The Traill-Steele Medical Society of North Dakota has the name of every physician in the two counties upon its membership roll. Is this not the banner society of the Northwest?

The State Board of Health of Montana is endeavoring to appoint nurses in every county of the state in view of the fact that many localities will be short of physicians because of their call to army service.

The legal department of South Dakota, it is said, holds that a physician cannot carry in his medicine-case liquor to supply a patient, but must give a prescription for it to be filled by a licensed druggist.

The State Board of Health of Minnesota will not have a separate exhibit at the State Fair next week, but will show moving-picture films and models dealing with farm sanitation. The exhibit will be a part of State Farm School extension exhibit.

Dr. B. J. Branton, of Willmar, is the only physician on the Federal Exemption Board, now in session in Minneapolis, to hear appeals from local medical examining boards, and requests for exemption on occupational grounds.

Supt. A. T. McDonald, of the Montana Tuberculosis Sanatorium, says the crusade against tuberculosis in that state has produced marked results. For the first time the Sanatorium has room for twenty or thirty more patients.

We publish on another page a supplemental list of physicians in Minnesota and a full list of physicians in South Dakota who have joined, or offered to join, the Medical Reserve Corps. The North Dakota list will be published in our next issue.

The Minnesota State Board of Health not only stopped an epidemic of spinal meningitis, but it has put most of the crippled victims of the disease in a fair way to recovery. An extra appropriation and medical science did the work.

Dr. W. F. Keller, health officer of Sioux Falls, S. D., says, in his annual report to the city commissioners, that nearly 20 per cent of the deaths in that city, are of non-residents, and such deaths should not be made a part of the city's mortality statistics.

Charges of neglect and ill treatment of a patient in the Warm Springs Insane Hospital of Montana, were not only proved to be without foundation, but it was shown that the lawyers back of the charges were practicing without a license in Montana.

Dr. Kate S. Kavanagh, of Minneapolis, died last month at the age of 63. Dr. Kavanagh had practiced twenty-four years, eight of which were in Minneapolis. She was a member of the Hennepin County Medical Society and the State Medical Association.

Governor Frazer, of North Dakota, has appointed as members of the State Board of Medical Examiners, the three physicians recommended by the State Medical Association,—Dr. J. C. Suter, Grafton; Dr. A. W. Skelsey, Fargo; and Dr. Archie D. McCannel, Minot.

The association of hospital superintendents recently organized in Minneapolis, has made an appeal through Superintendent G. W. Olson of the Swedish Hospital, asking President Wilson to take measures to relieve the threatened lack of coal in the hospitals. Such appeals have power.

Dr. W. W. Christian and C. W. Bock, advertising as "the St. Paul medical specialists," were arrested last month on a charge of swindling a South Dakota farmer. The "specialists" have a "chamber of horrors," in which their patients are shown the effects of disease. The case went to the grand jury.

The Minnesota State Board of Health has a man at work checking up the birth-registrations in various towns of the state. Many failures to register have been found, and prosecutions will be soon started against physicians who thus ignore the law. Every child is entitled to have his birth registered, and the physician who ignores this duty will be entitled to no sympathy when he faces the law with its severe penalty.

The Oregon State Editorial Association has requested us to say that 12,000 men are needed in the ship-building business at Portland at high wages. Physicians will do well to give this information to men specially qualified for this kind of work. Full information can be obtained from Secretary Philip S. Bates, Portland, Ore.

The Central Board of Examiners for the Officers' Reserve Corps, of which Dr. (Major) J. F. Corbett is chairman, has compiled a record of the graduates of the Medical School of the University of Minnesota from 1910 to 1917, inclusive. Information of only 75 per cent of such graduates was obtainable. Of this number, 52 per cent have tendered their services to the Government and joined the Medical Reserve Corps. Considering the number exempt for various causes, the record is magnificent.

The following physicians now occupy suites of offices in the handsome new Metropolitan Bank Building, Minneapolis: Dr. H. C. Aldrich, No. 1132; Dr. E. E. Austin, 1132; Dr. Geo. E. Benson, 1111; Dr. A. E. Booth, 1132; Dr. Oliver R. Bryant, 1027; Dr. John Butler, 1042; Dr. E. J. Clark, 1005; Dr. G. L. Doxey, 1132; Dr. O. K. Eggen, 915; Dr. Kristian Egilsrud, 1039; Dr. G. B. Hamlin, 1132; Dr. A. J. Hammond, 1132; Dr. E. W. Hansen, 1111; Dr. S. V. Hodge, 1101; Dr. A. E. Johnson, 905; Dr. H. M. Koller, 925; Dr. L. R. Koller, 925; Dr. H. P. Linner, 1033; Dr. Thos. F. McCormick, 1111; Dr. C. F. McCusker, 915; Dr. Justus Matthews, 1021; Dr. H. McI. Morton, 1011; Dr. O. A. Olson, 1119; Dr. Fred J. Pratt, 919; Dr. J. A. Pratt, 919; Dr. Henry W. Quist, 1033; Dr. C. J. Ringnell, 1133; Dr. J. H. Rishmiller, 1101; Dr. J. H. Schroeder, 1042; Dr. Gilbert Seashore, 1119; Dr. H. J. Tunstead, 1126; Dr. F. W. Wittich, 1042; and C. D'A. Wright, 1111.

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ADDITIONAL NAMES OF MINNESOTA PHYSICIANS EXAMINED AND RECOMMENDED FOR COMMISSIONS IN THE MEDICAL RESERVE CORPS OF THE UNITED STATES ARMY*

Barrett, Frederick Gilbert
 Bates, B. V. Wheaton
 Berge, P. L. Brainerd
 Bjorneby, P. C. Bagley
 Cornica, A. D. St. Paul
 Cyr, Alphonse Barnesville
 Carpenter, O. C. Litchfield
 Dedolph, Karl St. Paul
 Elias, F. J. Duluth
 Errickson, W. A. Faribault
 Favour, Richmond. Red Lake
 Holmes, H. S. Aurora
 Kolset, C. D. Benson
 Morris, H. A. Minneapolis
 Mark, D. B. Minneapolis
 Mesker, G. H. Olivia
 Nannestad, J. R. Albert Lea

O'Donnell, D. M. Ortonville
 Oerting, Harry. Minneapolis
 Pearsall, R. P. Aurora
 Robbins, D. F. Minneapolis
 Reinhardt, W. R. L. Minneapolis
 Swanson, R. E. Alexandria
 Selleseth, J. F. Minneapolis
 Wippermann, P. W. Minneapolis
 Bjerken, F. N. Red Wing
 Buie, Louis A. (Mayo Clinic)
 Rochester
 Coleman, Fred B. Austin
 Dailey, Wm. J. Blooming Prairie
 DeTuncq, A. E. Preston
 Doe, Chas. H. Rochester
 Fortney, Gerhard O. Zumbrota
 Hanson, Adolph M. Faribault

Hayes, J. M. (Mayo Clinic)
 Rochester
 Hunte, A. F. Truman
 Lindsay, Wm. V. Winona
 Meany, John F. Rockwell
 Melson, Oliver C. (Mayo Clinic)
 Rochester
 Pemberton, J. deJ. (Mayo Clinic)
 Rochester
 Radabaugh, Rudolph C. Mazepa
 Rudolph, S. F. Albert Lea
 St. Clair, Gordon G.
 Section Thirty
 Stewart, Oliver E. Bricelyn
 Walker, James D. Wykoff
 Walker, James C. (Mayo Clinic)
 Rochester

SOUTH DAKOTA PHYSICIANS WHO HAVE JOINED THE MEDICAL OFFICERS RESERVE CORPS

Anderson, E. T. Platte
 Brown, F. O. Carthage
 Carney, J. C. Parkston
 Crawford, J. H. Castlewood
 Donahoe, W. E. Sioux Falls
 Doty, A. J. Colman
 Dyar, B. A. De Smet
 Edwards, George. Bruce
 Farnsworth, C. P. Mitchell
 Field, L. M. Aberdeen
 Frink, O. G. South Shore
 Goldman, E. W. Madison
 Grosvenor, L. N. Huron
 Harlan, H. H. Lower Brule
 Harris, H. G. Wilmot
 Jones, Thomas E. Sioux Falls

Keene, F. F. Wessington Springs
 Kriesel, W. A. Watertown
 Laben, G. T.
 Cheyenne River Agency
 Leighton, I. W. Scotland
 Logan, E. A.
 Cheyenne River Agency
 Long, G. J. Oldham
 Longstreth, W. I. Sisseton
 Lowthian, G. H. Fulton
 McCallister, Crow Creek Agency
 Miller, J. L. Winner
 Mullen, R. W. Florence
 Noble, A. G. Howard
 Parker, C. H. Summit
 Parsons, H. C. Watertown

Pemberton, M. O. Deadwood
 Pinard, P. R. Wagner
 Ramsey, Guy Salem
 Read, F. T. South Shore
 Sigler, G. V. Highmore
 Sutton, Dewey Redfield
 Thompson, T. G. Sioux Falls
 Trail, C. J. Sioux Falls
 Valby, J. P. Viborg
 Warnshuis, G. J. Herried
 Weishaar, C. H. Andover
 Wentz, H. B. Verona
 Williams, C. A. Doland
 Wood, T. J. Huron
 Wright, O. R. Huron

*These names are additional to the list given in our issue of August 15. Neither list contains the names of physicians examined at Fort Snelling, this small list being unobtainable.

POSITION OFFERED

The undersigned knows of two especially good locations in Minnesota for a German-speaking physician. Write at once. Address 541, care of this office.

ASSISTANT WANTED

An assistant in mining work. Small hospital, Northern Minnesota. Salary \$150. State school, experience, age, and habits. Give references. Address 555, care of this office.

POSITION WANTED

I will substitute for surgeon going to war or out of town. Would consider any opportunity in surgery in Twin Cities or adjacent territory. Address 535, care of this office.

PHYSICIAN WANTED

I want a physician to substitute for me during my period of army service. Nothing to buy. General practice in village of 400. Good territory. Address 562, care of this office.

LOCATION OFFERED.

Doctor wanted, preferably German-speaking, to locate here. New town, very large territory, assistance offered to right man. Address Timmer Commercial Club, Timmer, N. D.

LOCATION WANTED

I wish a location in North Dakota. Have some money to invest. Give size of practice, population, price, etc., in first letter. Address 561, care of this office.

LOCUM TENENS WANTED

I want a physician of experience to take my practice while I am in the army. I have a \$5,000 unopposed practice, and will make a liberal proposition to the right man. Address 552 care of this office.

DESIRABLE OFFICES FOR RENT

I desire to sublet my offices in the P. & S. Building, Minneapolis, for part or whole time. Will rent one or three private rooms with share in reception-room at very reasonable rates. Address 562, care of this office.

PRACTICE WANTED

An unopposed general practice running \$4,000 cash or better per year, without major surgery, by an experienced, married physician not subject to draft. Will lease or rent office and residence for definite period of time from a doctor joining the army. Prefer village with some modern improvements, and thickly settled territory. Can give best of references. Address 566, care of this office.

OFFICE POSITION WANTED BY A GRADUATE NURSE OF FOUR YEARS' OFFICE EXPERIENCE.

A woman, aged 32, desires a position in a physician's office in the Twin Cities. A competent nurse with good references. Address 547 care of this office.

SCHUIDEL-WESTERN X-RAY COIL FOR SALE

A Scheidel-Western 12-inch X-Ray Coil with two tubes and one stand, all in perfect condition, used by my late husband, is for sale at a very reasonable price. Address 545, care of this office.

PRACTICE FOR SALE

In Minnesota city of 2,300. Population German and Bohemian. Good train service; 50 miles from Twin Cities. Practice goes to physician purchasing my office equipment valued at \$500. Going into army. Address 559, care of this office.

ASSISTANT WANTED

Assistant resident physician, single, in a rapidly growing tuberculosis sanatorium of one hundred beds. By January 1, 1919, will have three hundred beds. Salary \$900. Excellent chance for advancement for the right man. Address 553, care of this office.

PRACTICE FOR SALE

At cost of office equipment, practice averaging \$400 per month. German-American community. Four churches, two banks; large saw-mill; good farming country. Competition right. Am going to large city by Sept. 15 if possible; therefore must sacrifice. Address Box 254, Frazee, Minnesota.

LOCUM TENENS WANTED

Minnesota, village of 400. Unopposed 5,000 practice; large territory; nothing to buy; office rent only. You must leave the field on my return from military service and must not be subject to draft. Write particulars about yourself and references in first letter. Address 554, care of this office.

PRACTICE FOR SALE

First-class location in a growing town of 800 in North Dakota, on two branch railroads. Town has sewers and waterworks, and is building an \$80,000 schoolhouse. Have a six-bed private hospital. Have entered the Medical Service. Price \$1,500. No competition in field. Address 551 care of this office.

PRACTICE FOR SALE

First-class location in a growing town of 800 in North Dakota, on two branch railroads. Town has sewers and waterworks, and is building an \$80,000 schoolhouse. Have a six-bed private hospital. Have entered the Medical Service. Price \$1,500. No competition in field. Address 551, care of this office.

PRACTICE FOR SALE

As I am specializing I wish to sell my office equipment, which invoices \$900; and the good will of a \$6,000 business. North Dakota town of 1,500. State Normal School, 15-bed municipal hospital, fine roads, good collections and plenty of territory. Immediate possession given. Price, \$600. Address 548 care of this office.

MINNEAPOLIS OFFICES FOR RENT

Sept. 1. Strictly modern well-located six-room heated apartment with dentist's office. Good practice. Close to two schools, and Father Cleary's parish. Busy, rapidly growing, car-line corner. Attractive rent. Also apartment with physician's office. Address 534, care of this office.

PRACTICE FOR SALE

A \$4,500 unopposed practice, in richest county of state; crops fine; good roads; collections, 98 per cent. Very large territory, good town, population, 500; railroad division; Soo R. R. appointment. Have good residence; will sacrifice same with practice, \$2,800, part down, balance terms to suit. Object of sale, specializing. Address 537, care of this office.

PRACTICE FOR SALE

A \$4,500 practice in a modern Southeastern South Dakota town of 700. One competitor in a territory of 20 miles. Population is 50 per cent Scandinavian. A Swedish physician can do \$6,000 to \$8,000 business without surgery. Good chance for nose and throat surgery. Will sell practice, office fixtures, and drugs for \$300. Address 549 care of this office.

POSITION WANTED

Permanent salaried position by a physician, graduate of class A + school, with ten years' experience in hospital, general, and contract practice. Competent in all lines except major abdominal work. Married, clean habits, and best of references as to character and ability. Salary \$200 a month to start with, and chance for advancement. Address 564, care of this office.

ASSISTANT WANTED

I want an assistant. Will pay good salary and furnish everything to some young man who has been disqualified for military service or who is above draft age. I want a man who has had laboratory training in bacteriology and stomach work. This position will allow the acquiring of technic in Röntgenographic and general x-ray work. Address 560, care of this office.

PRACTICE FOR SALE

Wanted a physician to take over a well established unopposed practice of \$4,000 to \$5,000 in a growing town of 550 on main line of railroad in southwestern Minnesota. Collection 99 per cent. Includes insurance, county poor appointments and small stock of drugs. Will bear inspection. Terms to suit. Am commissioned in Medical Reserve Corps. Address 563, care of this office.

PRACTICE FOR SALE

A \$4,000 practice in a Minnesota town of 1,000 inhabitants, 35 miles from the Twin Cities. Competition, one aged physician. Population, German Lutheran and Catholic. Good pay. Office building, a 1914 touring car, and full set of instruments for an up-to-date physician. A good man cannot fail to make good from the start. Reason for selling, joining the Medical Reserve. Half cash; remainder, bankable notes. Address 544, care of this office.

PUBLISHER'S DEPARTMENT

HORLICK'S MALTED MILK

People have so long looked upon Horlick's Malted Milk as the most delightful of beverages that they may forget its food value for the sick, the convalescent and especially for children.

As we learn more of the caloric value of foods, together with their assimilability, we place Horlick's nearer the top of all foods fit for impaired metabolism.

There are no secrets about either its preparation or its contents: it is simply a high-grade malted milk—in other words, it is Nature's best food made more easily digested and assimilated by Nature's own process.

THE VICTOR COMBISTAT

The work of electromedical and physical therapeutics in the treatment of the wounded in the hospitals of England and France, seems to give renewed interest to this branch of medicine; and the need of a more efficient office apparatus has brought forth the Victor Combi-stat, which has a wide range of service. Connected to an electric light socket, it furnishes the sinusoidal, galvanic, cautery and diagnostic-lamp currents, and gives vibratory and pneumatic massage, etc.

The Victor Electric Corporation of Chicago or their Northwestern distributors, Messrs. Noyes Bros. & Cutler, will send full descriptive matter of the appliance or exhibit it to anyone interested.

DR. FANTUS CANDY MEDICATION

The Western Chemical Company, Inc., of Hutchinson, Minn., did the medical profession a real service, which has had due recognition, when they put upon the market the standard drugs in really palatable form. Other manufacturers have long done the same kind of work, but none of them has reached the high degree of perfection obtained by this company using the formula of Dr. Bernard Fantus, of the College of Medicine of the University of Illinois. Clinical samples, sent free upon request, will convince any physician of this fact. The reader who writes the Western Chemical Company, Inc., Hutchinson, Minn., for samples and a list of their pharmaceuticals which they prepare, will be glad he did so.

THE POTTENGER SANATORIUM

The sanatoria of America, especially those devoted to diseases of the lungs and throat, are doing a great and beneficent work in both the study of disease, particularly tuberculosis, and in teaching people, even though they do not enter an institution, how to take care of themselves and how to protect the public against the spread of contagion.

Very few sanatoria are doing so much in these lines as the Pottenger Sanatorium. Its location and its equipment are large factors in its work for its patrons; but, after all, the man at the head of such an institution, together with his staff, determine its success, as it relates to both its patrons and the general public. There is no better evidence of the deservedly high standing of Dr. Pottenger than his masterful writings on tuber-

culosis, one of which was reviewed at unusual length in our issue of June 15 by Dr. J. W. Marcle, who is a recognized expert in the subject, with a large experience in sanatoria of the highest standing and is now at the head of Hopewell Hospital, the Minneapolis municipal sanatorium. Dr. Marcle found only words of commendation for Dr. Pottenger's exhaustive treatise, entitled "Clinical Tuberculosis."

DR. WEIRICK'S SANITARIUM

Few western institutions for the care of drug addicts and special nervous cases have won from the medical profession more cordial endorsement than Dr. Weirick's Sanitarium, located in the beautiful city of Rockford, Ill.

The other day we heard a very intelligent Minneapolis woman, who had just visited her father in the institution, say that, while his presence there made her sad, she was happy to know that he was receiving such good care in such a delightful place.

The number of patients in the Sanitarium is limited to 44, and overcrowding, resulting in lack of both personal and medical attention, is not permitted—and it never should be in any such home for the unfortunate.

Dr. Weirick is maintaining the excellent reputation given in the institution by its founder, the late Dr. Broughton.

HAY FEVER AND BACTERIAL VACCINES

Dr. G. H. Sherman, of Detroit, Mich., is a recognized authority on the subject of vaccines; and in our last issue (August 15) one of our leading physicians reviewed his book on the subject, commending him very highly for his vaccine work.

Even though he be over-enthusiastic in the matter of vaccines in the alleviation of hay fever, the patient who gets the relief will be even more enthusiastic.

Dr. Sherman's vaccines are well worth trying in all promising cases, for, under all circumstances, they are like the physician whom Dr. Janeway recommended: They can do you no harm.

The physician who uses the bacterial vaccines intelligently always finds so much good in them, even though the percentage of absolute cures may be small, that he does not abandon them.

His full literature is well worth having, and it is sent free for the asking.

THE TREATMENT OF RABIES

The treatment of rabies is essentially preventive, since there is no known cure for the disease once symptoms have developed. Rabies may be prevented, during the incubation period, in persons bitten by rabid animals, by prophylactic injections of attenuated rabies virus.

Harris' modification of the Pasteur treatment for the prevention of rabies is prepared by Eli Lilly & Company of Indianapolis. By means of this virus a high degree of immunity can be established in fourteen days, and by the family physician, doing away with the necessity of the patient leaving home and obviating any loss of time and great expense.

The virus is the brains and spinal cords of animals dead from fixed virus inoculation. This virus is ground to a paste, frozen, pulverized, and rapidly dried

in vacua. The powder is sealed in vacua, and stored in the cold.

The virus is supplied in syringe-containers emulsified and ready for use. All that is necessary for the physician to do is to place an order with the druggist who will telegraph the nearest Lilly depot. The first three doses will be promptly available, and thereafter one freshly prepared dose will arrive daily for eleven days, thus completing the treatment in fourteen doses, one daily. The dosage is standardized in units, the virus is non-toxic and the treatment free from complications.

An interesting booklet on "Rabies and Its Treatment" will be sent to readers of this journal on request made to Eli Lilly & Company at Indianapolis.

WALDHEIM PARK

The Waldheim Park is the name of one of the oldest sanatoriums in Wisconsin and it is situated in one of the finest parts of that state of health resorts, namely Oconomowoc. The institution is one for the treatment of the chronic ill especially of a nervous character. It is now building a fine modern hospital, which will enable the management to do the work made possible by the medical progress of the day.

This hospital will be fully equipped for research and diagnostic work, and all new patients will remain in it until their cases are fully diagnosed and proper treatment for them prescribed. This is modern practice, and it appeals to the scientific mind as the best possible way of producing cures, speedily and surely.

Dr. J. H. Voje is in charge of Waldheim Park, and he invites correspondence from medical men.

MODERN MARTIAL THERAPY

Amid the veritable swarm of new medicinal agents of all varieties that have been introduced to the therapist during the last twenty years, and in spite of the great advances in general medicine during the same period, there has not as yet been proposed any remedy which can successfully compete with iron in the treatment of anemic and generally devitalized conditions. This metallic element, in one form or another, is still the sheet-anchor in such cases, and when intelligently administered in proper form and dosage can be depended upon to bring about marked improvement, provided serious incurable organic disease is not the operative cause of the existing blood impoverishment. The form in which to administer iron is, however, very important. The old, irritant, astringent martial medication has had its day, and properly so. Probably the most generally acceptable of all iron products is Pepto-Mangan (Gude), an organic combination of iron and manganese with assimilable peptones. This preparation is palatable, readily tolerable, promptly absorbable, non-irritant and still distinctly potent as a blood builder and general tonic and reconstructive.

HYPODERMIC MEDICATION

Hypodermic medication usually means emergency medication. When the occasion for it arrives, the physician, if he is to employ a tablet solution, is fortunate if he has tablets upon which he can depend. The failure of the tablet is his failure—he cannot shift the burden of responsibility. And tablets for hypodermic use, to be reliable, must possess a number of important qualifications. They must be true to

label; they must be active; they must contain a definite amount of medicament; they must be soluble.

These thoughts were vividly impressed upon the mind of the writer upon the occasion of a recent visit to the hypodermic tablet department of Parke, Davis & Co. Here we see hypodermic-tablet manufacture reduced to a science. Here we find tablet-making facilities that exist probably nowhere else in the world. The equipment is complete to the last degree. The department is spacious, light, airy, clean. It is supervised by an expert who has specialized for years in this branch of manufacturing pharmacy and who has selected his assistants with discrimination. Every worker is an adept. Every hand is schooled to its task.

In the manufacture of Parke, Davis & Co.'s hypodermic tablets the components of the various formulas are weighed and reweighed, checked and rechecked by two experienced pharmacists working independently, one acting as a check upon the other, thus guarding against the possibility of error.

THE PROBLEM OF WATER STERILIZATION SOLVED

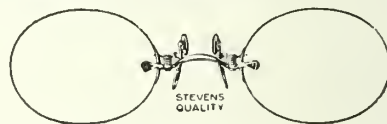
Dr. H. D. Dakin has now, with the assistance of Dr. E. K. Dunham, Major United States Army Medical Service, won new laurels in the field of sanitation through his new water-sterilization tablet, known as Halazone. The name of the synthetic substance is p. sulphondichloraminobenzoic acid.

In a recent report to the British Medical Research Committee announcement was made of this new substance by Dr. Dakin and Dr. Dunham. This report shows that the new substance, which will be known for convenience as Halazone tablets is a powerful germicide, is more stable than any chlorine preparation now being used for this purpose and the resultant sterilized water is not unpleasant to the taste.

Laboratory tests show that drinking water containing bacillus coli, and polluted by pathogenic organisms such as bacillus typhosus, bacillus paratyphosus A and B, bacillus cholerae, bacillus dysenteriae (Flexner), bacillus dysenteriae (Shiga) and 5 per cent sewage disposal are made sterile in from 15 to 60 minutes with Halazone tablets.

Four milligrams of Halazone in tablet form will sterilize one quart of water.

Halazone is manufactured and supplied in this country by the Abbott Laboratories, Chicago, from whom further information can be obtained.



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THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, SEPTEMBER 15, 1917

No. 18

THE DIAGNOSIS OF GALL-BLADDER DISEASE*

By W. H. BODENSTAB, M. D.
BISMARCK, NORTH DAKOTA

In looking over the mortality records for the last five years and the causes of death in our clinic at Bismarck, I was impressed with the fact that a large percentage of these deaths were preventable, provided that these patients had received earlier attention. Some died without operation, while others submitted to surgery as the only possible means of recovery. I refer particularly to the acute intra-abdominal lesions, namely, appendicitis, gastric and duodenal ulcers, and cholecystitis.

We are all familiar with the importance of early diagnosis and surgical treatment of acute appendicitis and perforating gastric ulcer, but I do not think that the profession at large has been strongly enough impressed with the importance of early operation for the relief of gall-bladder inflammations and their results. It is especially cholelithiasis and active cholecystitis to which I wish to call attention because of their great practical importance, not only because of the suffering they entail, but also because of the more serious consequences which have not been sufficiently emphasized and which swell our mortality rate, namely, cancer of the gall-bladder or ducts, rupture of the gall-bladder with septic peritonitis, empyema of the gall-bladder, suppurative cholangitis, abscess of the liver, hepatitis, pancreatitis and other less serious complications, all of which can be averted by an early diagnosis and operative treatment.

The practice of waiting for further developments, for the appearance of jaundice to verify the diagnosis, or until direct danger to life is evident, is still too general. Realizing that many lives are thus sacrificed which might be saved, and that the voice of the internist is sometimes heeded by the general practitioner and the patient more than that of the surgeon, I thought that I might be of help to those who are still hesitating, as well as those upon whose diagnostic skill and judgment depend the welfare and the lives of a great many people. I have, therefore, reviewed all the histories of the cases of inflammation of the gall-bladder which were operated upon in our clinic since January 1, 1911, by either Dr. Quain or Dr. Ramstad, and have tabulated the symptoms as they were recorded at the time these histories were taken and the patients referred for operation. According to this table it will be seen that the diagnosis of gall-bladder disease rests almost entirely with the anamnesis, and the patient will frequently relate the history of an attack of colic, which is so definite that it seems almost stereotyped.

The reason that so many cases of cholecystitis or cholelithiasis are taken, or rather mistaken, for disease of the stomach, is due to the fact that disease of the gall-bladder produces symptoms which are referable to the stomach. These are reflex symptoms, and they are in no way related to the taking of food,—a fact of which we must never be forgetful,—and yet hardly a day passes by on which patients do not present themselves at our clinic with a typical gall-bladder history, but with a previously made diagnosis of acute

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

gastritis, gastralgia, gastric catarrh, dyspepsia, indigestion and other erroneous names. The series comprises a total of 452 cases, and I have divided them into two groups,—namely, those in which stones were found, and those where no stones were present, but where the examination indicated a pathological condition of the gall-bladder. In the first group there were 311 cases, and in the second 141, which showed the following:

	Cholelithiasis 311	Cholecystitis 141
	Per Cent	Per Cent
Tenderness	266—85.5	132—93.6
Vomiting	249—80	64—45.5
Belching	247—79.5	93—70.9
Cramps, radiating	221—71	56—39.7
Dyspnea	220—70.8	56—39.7
Epigastric distress	91—29	59—41.8
Prostration	78—25	6—4.3
History of jaundice	74—23.8	11—8
Cramps, not radiating	67—21.5	71—50.4
Bile in urine	54—17.4	2—1.4
Sex	Male, 32	Male, 31
	Female, 279	Female, 110
Parity	0 to 15, average 6	Average 5
Gastric acidity	0 to 100, average F. 21	Average F. 35
	C. 18	C. 17
Duration of illness	1 mo. to 26 years	1 mo. to 37 years
Time of day	Day 2%; night 10%	Night, 6%
	Day and night 88%	Day and night 94%

Tenderness.—The most constant symptom in this series was tenderness over the gall-bladder region, and it was present in over 85% of cases with stones and over 93% of cases without stones. The degree of tenderness depends upon the severity of the inflammation and the degree of distension of the gall-bladder. The most satisfactory manner of eliciting this symptom is the following: The examiner places his left hand firmly and with the palm up in the patient's right flank, and the tips of the fingers of his right below the right costal arch over the region of the gall-bladder. The patient is then asked to breathe deeply. On expiration, when the abdominal muscles are relaxed, a sudden pressure upward with the right hand is made. If the gall-bladder is distended a sharp sting is experienced by the patient, which manifests itself by a typical expiratory "catch" or "grunt." Pressure over an inflamed empty gall-bladder also causes pain, but not of so stinging a character. During active inflammation or during an attack of colic the gall-bladder is extremely tender, and there is present marked muscle spasm, the result of a local peritonitis.

Vomiting.—Infections of the biliary tract are frequently accompanied by antiperistalsis, and bile is regurgitated into the stomach and because of its emetic qualities there is vomiting or nausea, the vomitus nearly always consisting of bile. In the 249 cases, 26, or slightly more than 10%, had

nausea without vomiting, while 27 of the 64 cases without stones, or approximately 45%, had nausea without vomiting. Sometimes the vomiting will relieve the attack the same as in gastric ulcer, but often the patient keeps on vomiting until the bile ceases to flow into the stomach. I have made it a rule—and it has served me very well—that whenever vomiting is present in an upper abdominal lesion and an obstruction of the pylorus can be excluded, to look to the gall-bladder as the offending organ.

Belching.—Gas often troubles during the attack and gives the sensation of bloating and upward pressure, sometimes extreme, and is relieved only by eructations. It was positive in approximately 80% of cases with stones, and in nearly 71% of the cases without stones. In gastric ulcer we frequently find belching, and it is claimed by some authorities that it is of no significance in differentiating ulcer from cholecystitis. My experience has been entirely different, as is shown by the high percentage of positive cases in our series. Of particular importance is the fact that belching in cholecystitis is independent of the taking of food; it may be most pronounced between meals, often coming on suddenly, of short duration and followed by prompt relief from the annoying bloating, distress, upward pressure, etc., whereas in ulcer it usually occurs at a specified time after meals and disappears when gastric digestion is completed.

Dyspnea.—Deep respiration gives pain during an attack of colic and there is a subsequent spasm of the diaphragm which allows only of a limited excursion, causing a marked shortness of breath. The pain is sharp and stabbing, and is frequently mistaken for pleurisy or pneumonia. As soon as the attack of colic is completed the dyspnea disappears, and the patient is able to breathe with little or no discomfort.

Prostration.—During an attack of gall-bladder colic there are often great anxiety and free perspiration, and the patients have a feeling of impending death, and without being asked the direct question they frequently make the statement: "I thought I was going to die." This symptom is present much more frequently when there are stones than in cholecystitis without stones; but in either case when it is present it is almost pathognomonic of gall-bladder obstruction. This feeling of impending death was recorded in only 78 cases, or 25% of our series of stones; but I am confident that it will be found present in a much larger percentage of cholelithiasis cases if

careful inquiry is made. I never omit the question in the anamnesis in suspected gall-bladder cases, and it has frequently helped me out when the diagnosis was in doubt.

Radiating Cramps.—When the gall-bladder becomes over-distended from obstruction of the cystic duct or the common duct, there occurs sudden severe epigastric pain with radiation either to the right costal arch or to the left, and through to the back or the region of the shoulder blade, or to the right or left shoulder, which, after a longer or shorter terrific spell, ceases as suddenly as it appeared. It is of a sharp, lancinating character, coming on at irregular intervals, by day or by night, often bears no relation to food, and without apparent cause. This is the typical gall-stone attack, and was found present in 221 patients with stones, or in 71% of the first group, and in 56, or 39.7%, of the second group. There are many variations in the character of the pain, in its radiation and its severity, although no definite knowledge can be gained by it as to the location of the stones. I have often seen a cystic duct stone at operation when the pain radiated to the left costal arch.

I use the word "cramps" for these pains because its use has often brought out a typical gall-bladder history, which otherwise would have been difficult or impossible to get. This is particularly true of the German and Russian patients who present themselves with an indefinite stomach history, and seem altogether forgetful of the attacks of "Magenkrampf" or "Mutterweh," from which they suffered ten or twenty years ago, but which are promptly recalled by the use of these expressions. As a rule, the attacks of colic due to cholelithiasis are more severe, and when they cease there is usually sudden return to health; whereas in cholecystitis the attacks are less severe, but of longer duration, with a succeeding soreness which lasts sometimes several days.

Epigastric Distress.—Many of the cases of chronic cholecystitis come for advice for stomach trouble, the reflex symptoms of digestive disturbance causing far more annoyance than the local gall-bladder manifestations. A great many of our series, 91, or 29%, of the first group, and 59, or 41.8%, of the second group, gave a history of epigastric distress, which characterized itself by its irregularity of appearance. It may vary in degree, and all foods cause distress, which is not influenced by soda or acids, but usually by belching or vomiting. As a whole epigastric distress is so much like that of ulcer or other stomach

trouble that no conclusion can be arrived at until careful questioning brings out the fact that the patient has had recurring attacks of severe pain in the pit of the stomach, accompanied by much gas and bloating, which puts us at once on the track of a correct diagnosis.

History of Jaundice.—When we have radiating pains in the epigastrium followed by jaundice, our diagnosis is nearly always made for us. About 23 per cent of our stone cases gave a history of jaundice following one or more of the attacks, while in the cholecystitis group only 11, or 8 per cent, gave such a history. The jaundice is nearly always due to duct obstruction, mostly of the common duct. If a patient has a colic which is followed by jaundice, the colic was caused by the moving of a solid body or by an obstruction due to adhesions. If the jaundice comes first and then the colic, it is presumably due to an infection or a neoplasm. Many patients give a history of only one attack of jaundice, although they suffered from colic many times a year for many years. The jaundice may vary from a yellowish tinge of the conjunctiva to a dark-green discoloration of the entire body.

Cramps Not Radiating.—Only 21.5 per cent of our stone cases gave a history of epigastric cramps which were not radiating, while over 50 per cent of the cholecystitis cases without stones had cramps in the epigastrium which did not radiate. It will be seen by these statistics that non-radiating cramps in the epigastrium, when accompanied by other gall-bladder symptoms, favor the diagnosis of cholecystitis rather than cholelithiasis. These cramps must not be confounded with epigastric distress; they are severe, lancinating pains, but do not radiate to the back or shoulders.

Bile in the Urine.—If we had a chance to examine the urines of all cases of gall-stone colic within the first twenty-four hours after an attack, approximately 80 per cent would react positively to bile. In our gall-stone cases only 17.4 per cent gave a positive reaction, while in only 1.4 per cent of the cholecystitis cases bile was found. This small percentage is due to the fact that we see very few cases during or immediately after an attack, although the patients in most cases give a history of a dark-brown urine immediately after the attack of colic.

Sex.—Statistics vary greatly as to the percentage of men and women suffering from cholecystitis. In our series we found 32 men and 279 women, or approximately one male to nine

females harboring stones. Of the second group or that without stones the proportion of men was much higher, namely, 31 males and 110 females. This would lead one to believe in the theory of bile stasis in the gall-bladder due to pressure either from tight waist bands, apron strings, or the like, rather than in that of infection, because most of our stone cases were fleshy women who were in the habit of wearing aprons with tightly drawn strings.

Parity.—Of the stone cases in the first group, 17 women were nulliparæ, and the highest number of births were 15, the average being 6, while in the second group the average was slightly lower,—namely, 5. Whether pregnancy is an etiological factor in gall-stones, has not been proven, although many patients experience their first attacks during a period of pregnancy—probably the result of a stasis due to pressure from below.

Gastric Acidity.—At a recent medical meeting I heard a discussion on the gastric acidity in gall-stone disease which amused me very much. One eminent clinician found the acidity above normal, while another doctor of equal renown always found a low acidity. In an analysis of our cases I found the acidity varying from a HCl deficiency to 100 per cent. The average for the first group was free HCl 24, combined 18, or slightly below normal, while in the second group the average was free HCl 35, combined 17, or slightly above normal. In the acute cases there was usually hyperacidity, while in the chronic cases there was nearly always a low acid content.

Duration of Illness.—This factor is of no particular interest from a diagnostic standpoint, yet it is interesting to note that the patient who suffered from the disease for 37 years presented no stones at the operation. Whether or not the stones were passed into the bowel is a matter of speculation; yet, it seems barely possible that one should suffer attacks for that long a period without the formation of gall-stones. The shortest period of suffering was one month.

Time of Day.—In the first group 88 per cent of the patients had attacks both day and night; 10 per cent had only night attacks; and 2 per cent suffered in the day time. In the second group 94 per cent suffered both day and night, and 6 per cent had only night attacks.

Of the 311 cases of cholelithiasis 14 were discovered during the progress of some other operation, but in nearly all of these close inquiry after

the operation brought out an unmistakable gall-bladder history.

In studying the symptoms of our series of cases singly, certain conclusions were arrived at which warranted tabulation of the symptoms in groups or combinations, and I believe that a careful analysis of these combinations will be of immense help to us in arriving at a proper diagnosis of gall-bladder disease. I have taken the five most prominent symptoms and have called them the "five cardinal symptoms" of cholelithiasis. I have omitted "tenderness" and "epigastric distress" because they can be demonstrated in so many different diseases of the upper abdomen and have therefore much less value as a diagnostic factor.

CARDINAL SYMPTOMS OF CHOLELITHIASIS

1. Radiating pains	3. Belching	5 Prostration
2. Vomiting	4. Dyspnea	
Cholelithiasis		Cholecystitis
1-2	183—59%	31—21.3%
1-2-3	170—55%	27—20%
1-2-3-4	154—49.5%	20—14.2%
1-2-3-4-5	63—20.3%	5—3.5%
1-2-4	153—50%	22—15.6%
1-2-4-5	63—20.3%	5—3.5%
1-2-5	63—20.3%	5—3.5%

Since this article is supposed to take up only the early diagnosis of cholelithiasis and cholecystitis, I have refrained from mentioning symptoms of complications and sequelæ because the disease should not be allowed to progress to this point.

Regarding the x-ray as an aid in the diagnosis of gall-stones, I will say that our experience has not been very encouraging. All our gastroenterological cases are sent to the x-ray laboratory for examination, but the results, so far as the diagnosis of cholelithiasis is concerned, are rather discouraging. Such men as Case, Pfahler and George claim to be able to demonstrate gall-stones with the x-ray in from 50 to 85 per cent of their patients. If these reports are correct, their work must certainly be commended and their success is due to the fact that a great many plates are made which vary in density, one from the other, by varying the exposures and by using a different intensifying screen for each plate. This, of course, entails a large expense, as well as a great deal of time, and we have consequently discontinued the search for gall-stones by this method in our clinic. When the patients give a definite history of cholelithiasis, even though the

Röntgen findings are negative, they are referred for operation because negative *x*-ray findings do not exclude gall-stones.

The duodenal tube of Einhorn, which the latter claims will often help out in the diagnosis of cholecystitis, I have used in over 60 cases with very uncertain results, and it has helped me to make a diagnosis in a very small per cent of our patients. I have found infected bile and mucus in an apparently normal gall-bladder, and on the other hand I have recovered sterile bile, "golden yellow," etc., in patients who at operation showed gall-stones.

CONCLUSIONS

From a consideration of all of the above it is logical to assume, in order to get the most successful results, that early surgical treatment is indicated in gall-bladder disease, and that, in order to be able to operate early, an early diag-

nosis is essential. From a study of this series of cases with reference to the more modern *x*-ray and laboratory aids in diagnosis. I have drawn the conclusion that the older methods of diagnosis are still the ones upon which we must rely. A complete history of the patient's complaint, elicited with the most painstaking efforts, paying particular attention to the previous personal history, intelligent use of the eyes, ears, and fingers, together with the keen judgment of interpreting the facts, is still the paramount method in diagnosis.

In 90 per cent of all cases of cholecystitis and cholelithiasis a correct diagnosis can be made from the history alone, and in over 95 per cent of these cases the diagnosis of gall-stones is an established fact when the "five cardinal symptoms" are present.

FOR DISCUSSION SEE PAGE 598

ACUTE EMPYEMA OF THE GALL-BLADDER*

BY WARREN A. DENNIS, M. D., F. A. C. S.

SAINT PAUL

Comparatively little is seen in the literature on acute empyema of the gall-bladder, and yet it is a fairly common condition. In looking over our records for the past two years we were surprised to find that over 20 per cent of the gall-bladder cases were operated upon for this condition. The percentage of cases with stones in the gall-bladder and without pus was only a little higher. Whether or not this percentage is higher than that in the average surgical experience, these figures show the importance of a greater consideration for the condition than it has heretofore received.

It is not the purpose of this paper to consider the general subject of gall-stones, but to emphasize a few points on this special phase of it. The first concerns the conditions underlying acute empyema of the gall-bladder, to which it is believed attention has not been called except in a previous paper by the writer.

It is a well known fact that when a stone becomes impacted in the cystic duct so that there is a stoppage of the flow of bile into and out of the gall-bladder a condition of hydrops develops in that organ. It is found on operation to be filled with clear mucus without a tinge of yel-

low discoloration from bile. When a stone, instead of being impacted in the cystic duct itself, becomes, as the result of ineffectual efforts at expulsion, impacted in the pelvis of the gall-bladder just at the entrance to the cystic duct, this condition of hydrops of the gall-bladder has not been observed. On the contrary, this is the condition which has been found to obtain in all our cases of empyema. The condition was observed several times before it was suspected that it might have a special etiologic significance, and it has since been found present in every case operated on. Granting the correctness of these observations, what explanation can be offered for the differing reactions of the gall-bladder to the two locations of the impacted stone? It is thought that the following may perhaps be the correct one: The cystic artery, which supplies the gall-bladder, arises from the hepatic artery and passes downward and outward behind the peritoneum to join that organ just before it narrows to form the cystic duct. The cystic duct travels downward and inward to reach the common duct. The artery and the duct, therefore, while lying in the same space behind of, or between two layers of, the peritoneum, do not run parallel, but gradually approach each other, as they are traced toward the gall-bladder, till they lie in intimate relation at the pelvis of that organ.

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

In consequence of these relations it follows that when, as the result of expulsive efforts on the part of the gall-bladder, a stone becomes impacted in the pelvis, it presses upon the cystic artery, and thus seriously interferes with the blood supply of the entire organ. Its resistance is lowered, and conditions are rendered favorable for the development of an empyema. When, on the other hand, the stone is impacted in the cystic duct, there is no pressure exerted thereby on the cystic artery. The gall-bladder receives its normal blood supply. Its resistance is not lowered, and no empyema develops.

The symptoms of acute empyema of the gall-bladder are fairly typical. There is often a history of several attacks of gall-stone colic at varying intervals. These have subsided after a few hours' duration, and the patient in the intervals complains only of the regular qualitative type of indigestion with belching of gas after eating. Finally an attack of colic comes on in which the characteristic pain persists for several days. The pain persists because the stone has been crowded into the narrow pelvis, and can neither advance nor drop back into the free cavity of the gall-bladder. The pain is ameliorated by morphine, but complete relief does not come. Then one may predict with a good deal of confidence that fever will soon put in an appearance. Impairment of circulation from pressure on the cystic artery lowers the resistance of the gall-bladder to infection; fever then appears, accompanied not infrequently by chills.

Jaundice is not usually present. Its occurrence generally means interference with the flow of bile in the common duct, due either to the presence of a stone or to inflammation. It is not a symptom of any pathologic condition confined to the gall-bladder and cystic duct. Its presence shows that complications have arisen outside those organs. Instead of aiding the diagnosis, therefore, it makes it more difficult.

The lower border of the liver is likely to be found from a finger-length to a hand-breadth below the costal margin, producing the so-called Riedel's lobe. This condition may be found in hydrops, as well as in empyema, and is due to the fact that the gradually distending gall-bladder carries the liver down with it. When the gall-bladder is provided with a complete mesocholecyst, the liver is not carried down, and no Riedel's lobe is found. The gall-bladder itself is then easily palpated. Tenderness is a definite sign, and is often very acute when the

gall-bladder is accessible to palpation. Rigidity of the overlying muscles is not infrequently absent for the reason that the inflamed organ is deeply seated, and the peritoneal coat is the last one involved.

The Boas sign is present because the condition on which it appears to depend, namely, some degree of inflammation, is present.

That the treatment must be surgical is beyond question. It is not impossible for an acute empyema to subside; but in this case the same conditions are present as before, but even more favorably disposed for a repetition of the attack. The exciting cause and some of its consequences still remain. It occasionally happens that the empyemic gall-bladder, by a process of adhesion and ulceration, empties a part of its contents into the bowel. We have observed several of these cases, but in none did relief from the symptoms result, either because part only of the content was evacuated, or because of the crippling effects of necessarily extensive adhesions. In one such instance gastro-enterostomy was made necessary by dense adhesions involving the pylorus. In another, attacks continue to occur from time to time. The chances of a spontaneous cure, such as is occasionally achieved following total necrosis of the appendix with evacuation of the abscess into the bowel, are almost negligible.

When is surgical treatment indicated? As soon as the diagnosis is made if the condition of the patient warrants it. If the pulse and temperature are high and the tongue dry, and the general condition is that of an acute toxemia, it has been our custom to institute proctoclysis with bicarbonate of soda and glucose for a few hours, whereupon there is almost uniformly a great amelioration in the symptoms, and operation may be undertaken with comparative safety. The delay should not be too great, since rupture of the gall-bladder may occur, and, of course, this greatly complicates the situation. This condition was found in two cases, and necrotic areas were present in several others involving the entire thickness of the wall of the gall-bladder, and rupture was imminent.

The operation of choice for empyema of the gall-bladder with us has of late been cholecystectomy. Although Moynihan, as early as 1906, reported having done cholecystectomy in seven cases of this kind with only one death, and was inclined to consider it the best treatment, it is believed that even today the majority of surgeons

prefer drainage of the gall-bladder for acute empyema. In Keen's work on surgery the Mayos recommend cholecystectomy if the passage is not free, but this begs the question; for in the presence of an acute empyema no one can tell whether the passage after the subsidence of the acute inflammation will be free or not. Some certainly are. Lund, in a paper published two months ago (*Surgery, Gynecology, and Obstetrics*, March, 1917), says that acutely inflamed gall-bladders, especially if gangrenous, should be removed if the operation is not too difficult and the patient's condition not too poor. In the same journal C. H. Mayo gives empyema as one of the conditions in which cholecystectomy is indicated. This opinion is quite recent in this country, and is by no means generally accepted or followed.

The following reasons seem pertinent for favoring cholecystectomy rather than drainage:

1. The lesser danger of wound-infection. The gall-bladder is removed without opening, usually commencing at the duct. Danger of wound-contamination and peritonitis is thus greatly diminished. The cystic duct at the point of division shows no pus since it is beyond the point of obstruction and deficient circulation.

2. The certainty of not leaving an overlooked stone impacted in the pelvis. In many of these thickened and distended gall-bladders the palpation of a stone is impossible till after the fluid contents are evacuated. The operator then must choose one or other horn of the dilemma, that is, search carefully and risk wound-contamination, or imperfectly and take chances on leaving a stone impacted in the pelvis.

3. The avoidance of a second operation. Secondary operation is not infrequently required either to remove the gall-bladder, too badly damaged to functionate, or to remove the overlooked impacted stone. Nature sometimes expels the latter after the wound has drained for weeks or months and brought the surgeon almost to despair. We have had this experience.

4. The prompter and safer recovery. Following cholecystectomy the temperature drops at once, and convalescence is uninterrupted. Drainage cases, on the other hand, pursue a much slower and more uncertain course, and thereby favor secondary infections in both the wound and neighboring organs. Abscess of the liver or of the subdiaphragmatic region occasionally occurs.

The chief contra-indication for cholecystectomy is a general condition so bad that the administration of an anesthetic is unwarranted. In this case, simple drainage without complete search for the impacted stone can be done with local anesthesia, and may be advisable. In the very old or those in a severe septic condition it is our practice to do the work up to the actual removal of the gall-bladder under novocain infiltration. Ten or fifteen minutes of ether then suffices for the cholecystectomy, and the patient is awake before the closure of the wound is complete.

It is not impossible to imagine the finding of adhesions from former trouble so extensive or dense as to make drainage the operation of choice.

Even the presence of a co-existing stone in the common duct, in the absence of the conditions mentioned, would hardly be an indication for simple drainage. The duct would better be incised and the stone removed first, and then cholecystectomy done. Drainage, if indicated, can then be established either in the incision in the common duct or the stump of the cystic duct.

In performing cholecystectomy for acute empyema of the gall-bladder one should make a free incision so that the work will not be hampered by lack of room. The cystic duct should be handled with care since it is sometimes infiltrated and may tear. In two cases we have been obliged to leave a clamp on the stump of the cystic duct following this occurrence.

Of seventeen successive cases of acute empyema of the gall-bladder the first five had drainage, and the last twelve cholecystectomy. The five all recovered. One later required cholecystectomy, although no stone had been overlooked. One continues to have symptoms, and should have the gall-bladder removed. Three of the five got well as the result of simple drainage, but one of the three not till after six months had elapsed and two stones were extruded from the persisting sinus.

Of the twelve cases of primary cholecystectomy, two were found to have ruptured gall-bladders, with stones and pus well distributed over the right abdomen. One of these died. This was a woman aged 66 in an extremely toxic condition, so that operation was delayed in the hope of improving it. In spite of proctoclysis no improvement resulted, and the operation was done as offering the only possible chance. The other case with rupture recovered, as did the

remaining ten, and all are well. No secondary operation has been done or indicated.

SUMMARY.

Acute empyema of the gall-bladder is of relatively frequent occurrence.

Its imminence may be suspected whenever an attack of gall-stone colic is unduly prolonged.

The determining factor is believed to be the impaction of a stone in the pelvis of the gall-bladder.

Operation is indicated as soon as the diagnosis is made.

Cholecystectomy is the operation of choice, and can almost always be done. It is usually more easily and more safely done than drainage with removal of the impacted stone.

Convalescence is much more prompt than after a drainage operation, and the remote results are much better.

The need for secondary operation is practically eliminated.

It is doubtful whether the immediate mortality in parallel cases is as high as after drainage since the absorption of toxins and the spread of the infection are at once stopped.

DISCUSSION OF THE TWO PRECEDING PAPERS

DR. E. P. QUAIN (Bismarck): We are very much indebted to Dr. Dennis for this instructive paper.

He stated that 20 per cent of his gall-bladder cases had acute empyema. This is a far greater percentage than I have seen. From my own experience and from the observations from other clinics, I believe that the doctor's experience in this line is almost unique.

In the acute gall-bladder infection under discussion, the walls of the gall-bladder are filled with bacteria and necrosis has taken place not only in the mucous membrane, but often throughout the musculature. In such a case I cannot see any good in leaving the gall-bladder even "for drainage." The bacteria are still present in the gall-bladder wall; therefore, the lymphangitis about the gastrohepatic ligament is not relieved as promptly as after ectomy.

In most acute gall-bladders it is possible to tide the patient over the acute stage to remove the gall-bladder after the infection has subsided. Cholecystectomy is then quite safe and proper. To drain a gall-bladder with a necrotic and infected wall seems to me no more logical than it would be to open an acute appendix and drain it for a time before removing it.

DR. PAUL SORKNESS (Fargo): I listened to Dr. Bodenstab's remarks, and read the chart, with a great deal of satisfaction. I think he deserves a lot of credit for the chart he has prepared.

I wish to make one remark on Dr. Dennis' paper based on my limited experience in gall-bladder surgery, I would not remove the gall-bladder in all cases of empyema of that organ. It is the ideal operation whenever it can be done with reasonable assurance that the

patient can stand the additional surgical procedure necessary in removing an infected gall-bladder. But if we do not have this assurance I think it is much better to just drain the gall-bladder and later if found necessary remove it under more favorable local conditions. I can recall several patients during the last fifteen years of practice on whom simple drainage of the gall-bladder was done, and they are alive and well today. I also know of cases of empyema of the gall-bladder in which the gall-bladder was removed with fatal results, hence my plea for conservation in the line of surgery.

DR. A. BRATRUD (Grand Forks): During the last six months I have had several cases, and in nearly all of these the history was acute without symptoms before the attack. In all but one of these cases there was one large stone in the duct. One had several stones.

I was greatly impressed with what Dr. Quain was speaking about, as to whether the infection travels from the ducts into the gall-bladder, or whether the infiltration extends from the empyema of the gall-bladder down into the ducts.

DR. J. E. COUNTRYMAN (Grafton): I recently saw a case that would come along that line to some extent. The patient had a typical history of gall-stones. In fact, I did not have to make the diagnosis on the history as I saw her in a couple of attacks. There was extreme pain in the gall-bladder area, vomiting, some rise of temperature, and some little tenderness over McBurney's point, but the patient complained only of the trouble in the gall-bladder area. Experiencing two or three of these attacks where the symptoms were all the same, she decided to submit to operation, and, upon opening the abdomen, the gall-bladder was found to be normal. It was normal in appearance, and was easily emptied. The appendix showed a chronic condition. It was somewhat atrophied and curled up. It was removed. That was all that was done with complete relief of symptoms.

I would like to ask Dr. Bodenstab if he has observed similar conditions?

DR. E. A. PRAY (Valley City): I would like permission to relate a personal experience with gall-bladder trouble. Some five years ago my appendix was removed. The operation was so severe that the gall-bladder was not explored, although the diagnosis of possible gall-bladder involvement had been made. For ten months after the appendectomy I had the usual gall-bladder symptoms, the pain being so severe that an opiate was required for two attacks. I had about prepared myself for an operation when one day, having a severe attack of pain, I inflated my lungs to the utmost, and brought my closed fist with force down over the gall-bladder region; something seemed to give like the tearing of tissue and relief came immediately, and from then until now I have never had one bit of pain.

THE CHAIRMAN: If we keep on we shall have some new modes of treatment.

DR. PRAY: That is why I am partial to adjustments.

DR. BODENSTAB (closing on his part): With reference to the case described by Dr. Countryman: I can only say the we are all familiar with the difficulty experienced at times in differentiating gall-bladder disease from appendicitis. In a review which I recently made

of our intra-abdominal conditions which came to operation within the last five years, I found, I believe, seven cases which were diagnosed as cholecystitis, but in which the gall-bladder was perfectly normal, and, instead, a diseased appendix was found. Was the gall-bladder drained?

DR. COUNTRYMAN: No, not drained.

DR. BODENSTAB: We must consider the possibility of a cholecystitis without external evidence of any inflammatory condition, and I frequently have seen gall-bladders which appeared perfectly normal on the outside, yet when they were opened they were of the strawberry type. I always make it a point where the symptoms indicate it to ask for an exploration of the gall-bladder, and this procedure has frequently been the means of substantiating our diagnosis.

DR. COUNTRYMAN: The point is that we had three or four decided attacks in one year.

DR. BODENSTAB: We know today that cholecystitis is often secondary to appendicitis; the primary lesion having been removed by the removal of the appendix, the gall-bladder was given a chance to recover. This is true as well in this condition as in other foci of infection,—that is, in the tonsils or the teeth.

In regard to Dr. Pray's condition: I must say that we are indebted to him for a new treatment of gall-bladder obstruction. What happened we are unable to say, but it is barely possible that the obstruction was caused by a plug of mucus or a small stone, which was dislodged by the sharp blow struck against the distended gall-bladder. He might have had a thin band of adhesions which caused the obstruction and which suddenly gave way.

DR. DENNIS: (closing on his part): I was much interested in the paper of Dr. Bodensstab, and should like to have heard it more thoroughly discussed. It contains much food for thought. We have been much interested in the diagnosis of gall-bladder disease, and

have reached the conclusion that in many cases it is impossible to tell before operation whether gall-stones will be found or not. A chronic cholecystitis may produce the same symptoms as a gall-bladder containing stones before the advent of complications. One diagnostic point, which we consider of the greatest importance in the diagnosis of gall-bladder disease, was not mentioned in the paper: I refer to food idiosyncrasy and gas-belching after meals. These are almost invariably present, although the articles of diet causing the trouble may vary in different persons. Those most likely to cause it we have found to be cabbage, radishes, cheese, doughnuts, etc.—foods either solid in texture and eaten raw, or those prepared with much fat.

On making the diagnosis of gall-stone disease great care should be taken to exclude cases of ptosis. These also complain of gas-belching and distress after eating, but they do not have the characteristic food idiosyncrasy; that which distresses at one time may give no trouble at another. The fluoroscope of course shows the ptosis at once, and in its presence we should be very cautious in making a diagnosis of gall-bladder disease. However, it is of course possible for persons with ptosis to have other organic diseases.

Gall-bladder disease may be divided into three stages: first, the initial stage; second, that of complications; and, third, that of degenerations. The first stage manifests itself only by the characteristic food idiosyncrasy and gas-belching after eating. The second is the stage of complications including colic, inflammation, jaundice, and the physical signs accompanying them. The third stage, which may ordinarily follow the second stage, or which may occur without the typical signs of the second stage, is characterized by myocardial changes, nephritis, neuritis, arthritis, arteriosclerosis, etc.

We believe that a very large percentage of cases of gall-bladder disease can be diagnosed, if the opportunity is given, before the advent of the second stage. The cardinal signs of the second stage indicate, not gall-bladder disease, *per se*, but its complications.

MEDICAL PREPAREDNESS*

By F. A. SPAFFORD, M. D.

FLANDREAU, SOUTH DAKOTA

There comes a time in the history of every country when that nation is obliged to take up arms to withstand either foreign invasion or the encroachment of some hostile nation which threatens its liberties, or for the maintenance and support of some great moral principle which is involved. Since its conception and dedication to the cause of liberty, equality, and justice, universal freedom vouchsafed to all its citizens, the United States of America, so well defined by the immortal Lincoln as "a government of the people, for the people, and by the people," has been obliged to resort to arms in order to maintain its

lofty ideals and principles; and every time the people in their might have arisen to the support of this nation and in the appeal to arms, they have been successful. "The God of Battle heard their cry and gave to them the victory."

Today we are facing one of the great crises in the history of our beloved country. "A condition not a theory confronts us." We are actually at war with one of the strongest and most efficient nations on earth,—a nation to which we all for years have looked for guidance and assistance in many of the active problems of life, and which is today trembling upon the verge of the abyss of political destruction and disintegration, because in its selfishness it has seen fit to disre-

*Read at the 36th annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

gard the great principles of humanity underlying every international law and obligation. With the sinking of the *Lusitania* and other ships without warning, causing the wanton destruction of helpless women and children and the death of unarmed non-combatants, the Central Allies, joining themselves to the ruthless Turks, stepped outside the pale of civilization, and have practically arrayed the whole world against them.

We are in this war, why? I am going to quote from a late editorial in the *Kansas City Star*, "Because as the world's greatest democracy we are concerned in making the world safe for democracy." That, as the President has said, is the issue on which America entered the conflict. If autocracy wins this war the next war it wages will be 'our' war in a sense so intimate that no American will fail to understand it, for it can hardly fail to be waged against us.

Wherever war threatens democracy or the national security of peoples trying to work out their own well-being in peace—that is "our" war. It is "our" war when a military Government, repressing democracy at home, and guided by deliberate purpose pursued through years and generations, suddenly tears up treaties, and looses its armed hosts upon peaceful neighbors in a war of conquest and plunder.

It is "our" war when such a Government makes war upon international law and the laws of humanity, committing wholesale murder at sea, deporting civil populations into slavery, and wantonly destroying everything by which the kindliness of nature and the industry of man have made the earth fair.

America is not merely helping out in "their" war by supplying other nations with money and materials to fight it. If the stake was anything but democracy's stake—not our democracy's alone, but the democracy of the world—we would not be in the war at all. We can justify ourselves being in on no other ground than that it is a war of autocracy against democracy, and being in because it is a war of that character, it is "our" war to the last shot.

Let us see what some eminent authorities have to say as to the need of general preparedness, and then I will confine myself to the need of medical preparedness. In a late number of the *National Defense Digest* there is an article by Mrs. L. Worthington Smith well worth your perusal, "Upon Nobel Prize Winners Strong for Preparedness." In 1900 Nicola Tesla and Thomas A. Edison were awarded the Nobel prize. Tesla says:

Because war has itself become a science, and because war involves some of the most sacred sentiments of which man is capable. In fact, it is doubtful whether men who would not be ready to fight for a high principle would be good for anything at all. . . . Law and order absolutely require the maintenance of organ-

ized force. No community can exist and prosper without rigid discipline. Every country must be able to defend itself, should the necessity arise. The conditions of today are not the conditions of yesterday, and a radical change cannot be effected tomorrow. The establishment of permanent peace relations between nations would most effectually reduce the force retarding the human mass, and would be the best solution of this great human problem. But will the dream of universal peace ever be realized? Let us hope that it will. When all darkness shall be dissipated by the light of science, when all nations shall be merged into one, and patriotism shall be identical with religion, when there shall be one language, one country, one end, then the dream will have become the reality.

Fifteen years later Mr. Tesla's views on preparedness remained unchanged. In an interview last August he remarked, "It is my present belief that no effort or expense should be spared that could help toward putting this country in a position, not only to resist attack, but to make all the world respect those broad humanitarian principles for which the American people ever have been willing to fight."

Thomas A. Edison says that he is reasonably certain that we shall some day have a war. He says:

I consider it a probability that when that day comes we shall find ourselves unprepared to meet it. I believe it to be the duty of every American patriot to do what he can to see that this does not occur, but I do not believe that the events of recent months in Europe have shown their method of preparation to be the right one. . . . We should not take our men from industry and over-train them, but we should have two million rifles ready, in perfect order, even greased, with armories equipped with the very best machinery to begin upon short notice, in case the work should be required, the manufacture of a hundred thousand new firearms every day. We should not only have upon hand a large surplus stock of the best ammunition, but we should have government factories equipped to produce a thousand tons of high explosives in a month, if need arises. We should have a thousand trenching engines ready, and be prepared with every other mechanical device for rapid defense. Of these things I am certain.

Elihu Root, who received the peace award for 1912, says:

Vague and uncertain as the future must be, there is some reason to think that after the terrible experience through which civilization is passing there will be a tendency to strengthen rather than abandon the law of nations. Whatever the result may be, the world will have received a dreadful lesson of the evils of war. The sacrifice of millions of lives, millions homeless and in poverty, industry and commerce destroyed, overwhelming national debts—all will naturally produce a strong desire to do something that will prevent the same thing happening again. Violation of law must be followed by punishment. That punishment must be caused by powers superior to the lawbreaker.

In the coming conflict the medical profession must be tremendously alive to the great responsibilities which will be rapidly thrust upon it; we may be sure, however, that the medical man will not shrink his duty.

We may be rather slow in convincing ourselves of the magnitude of the problems with which we have to deal, but being once convinced the doctor will not be recreant to his trust in the day of his country's need. The successful and prompt organization of the Medical Corps of the Army and Navy with the aid of the Medical Reserve and Red Cross Units will prevent the appalling loss of life which the history of prolonged warfare for the last hundreds of years has proven true. While the open enemy kills about twenty per cent, the silent enemy of disease kills at least eighty. What a dreadful and unnecessary sacrifice of life; and to you as physicians the world will look for the elimination of this ghastly toll of human life. The most reliable statistics of war are to be found in Longmore's tables, which are based upon the record of battles for the past two hundred years. It might be interesting to consider some of these. In the Russo-Turkish war 80,000 died from disease, and 20,000 from wounds. In six months of the Crimean war the allied forces lost 50,000 from disease and 2,000 from bullets. It has been related that whole regiments died from disease without ever reaching the firing-line. In our war with Mexico, not the late unpleasantness, and in the Civil war between two and three died from disease to one from wounds. In the French campaign in Madagascar in 1894, 14,000 went to the front, 29 were killed in action and 7,000 died of preventable disease.

In the Franco-Prussian war about twelve Germans died of sickness to each one killed in battle. It was reserved, however, for our own country to cap the climax by losing fourteen young men from preventable disease to every one killed from wounds, and this too as late as 1898, so near the end of the "Great Century," of which Victor Hugo says in his "Les Misérables": "The Great Man must go out that the Great Century might come in"; and it seems to me at this time that other great men must go out that a greater century may come in with the establishment of the broad principles of democratic government for the whole world upon the graves of absolutism and political autocracy. But pardon this digression.

In 1894 the Japanese in their war with China lost about the same average as we did in our Civil war, that is, about three from disease to one from battle, and had at least 45 per cent of their army non-effective for active service on account of beriberi and other preventable diseases. In 1904 and 1905 in their war with Russia by careful attention paid to medical preparedness and modern sanitation, we find the startling fact that the Japanese, who many of us are taught, are such a terribly to-be-feared nation, suffered four deaths from bullets to one from disease, thus reversing the records of centuries of previous warfare of four from disease to one from bullets. This record was unapproachable in the annals of war. How was this marvellous result obtained? I am going to quote from a book entitled "The Real Triumph of Japan: The Conquest of the Silent Foe," by Surgeon Major Seaman, published by Appleton in 1906: "Ten years ago, when Japan was robbed of the legitimate fruits of her victory over China by the concerted action of Russia, Germany, and France, on the ground of their maintaining the integrity of Chinese territory, and immediately afterwards saw these grasping vultures deliberately appropriating the territory themselves, she recognized the magnitude of her own danger, and set about to prepare for the inevitable struggle that was to determine whether she was to remain an independent nation or was to become a vassal of the aggressive Muscovite. Her statesmen reasoned in this way. They said: We are about to engage in a terrible war with an antagonist of great strength and prestige, with enormous resources and a supposedly invincible army. That is our first, or open, enemy in the field. We are also to engage with another enemy, the grim specter that kills eighty out of every hundred who fall in war. This is our second, or hidden, foe. Our mortality in the conflict may reach a million men, and it is a sacrifice we are willing to make to preserve our freedom and our institutions. If this terrible slaughter occurs and the average of the wars of the last two hundred years is maintained, two hundred thousand men will fall on the firing-line or from wounds and eight hundred thousand will die in hospitals from disease. For every man who dies, there will be at least ten who will be ill, some of whom will be permanently invalided and incapacitated as fighting units. These men will require nursing and hospital care, necessitating enormous expense and impedimenta. We are willing to sacrifice the million

men, but the element of disease with its terrible cost and impedimenta must be eliminated.

With this point always in view, she sent her students all over the world to study the army systems in other lands. With the knowledge thus garnered she evolved a system of her own, based on the practices in vogue in Germany, but greatly modified, and the motto of which might have been "Prevention, not Treatment." She reasoned that a medical man at the front, like a sentinel on duty, could prevent the entrance of danger, and was thereby worth twenty men stationed in the rear to treat sickness after it obtained a foothold. She organized her medical department on broad, generous lines, and gave its representatives the rank and power their great responsibilities merit, recognizing that they had to deal with a foe that kills 80 per cent of the total mortality. She even had the temerity (strange as it may seem to an English or American army official) to grade her medical men as high as the officers of the line, who combat the enemy that kills only 20 per cent, and to accord them equal authority, except, of course, in the emergency of battle, when all authority devolves, as it should, on the officers of the line. In her home land she organized the most splendid system of hospitals that have ever been devised for the treatment of sick and wounded, and, with her army at the front, she put into execution the most elaborate and effective system of sanitation that has ever been practiced in war. Upon the declaration of war she was prepared to house, scientifically treat, and tenderly care for twenty-five thousand sick and wounded in Japan alone.

I have been able to obtain only a few statistics in the present European war. Some statistics are available from Germany, which has been fully prepared for the present struggle, France partially, England hardly at all.

I take the following from an article in the *Military Surgeon* for April, entitled "Civil Physicians and National Defense," by Lieutenant Colonel Henry Page of the Medical Corps, U. S. A. He states on authority that the German casualties to 1916 included killed and died from wounds 664,554, died from sickness 41,325. He states, "Had Germany been as unprepared as we were in the Spanish American war and had suffered accordingly, these deaths from sickness would have totalled two and one-half millions, and Germany today would be a conquered province." He quotes from Louis Fraenket in regard to the increasing efficiency of the German Medi-

cal Department, and the result of treatment in the military hospitals. He gives these figures:

	Fit for service	Died	Unfit
1914			
August	84.8%	3.0%	12.2%
November	87.3%	2.1%	10.6%
1915			
January	88.7%	1.4%	9.9%
April	91.2%	1.4%	7.4%

Compare these results with those of "Partially Prepared France." The *British Medical Journal*, 1915, 11,483, speaking of the proportion of recoveries of wounded in the French armies, states:

"It was in December, —, that the average proportion of wounded returned as fit for service was only 22.3 per cent. . . . In January and February, the proportion rose to 64 per cent. In April, to 86 per cent." Again, in a later number of the same journal, Bertillon, Director of Medical and Surgical Statistics of the French Army, states that the mortality of the French wounded was 5.8 per cent at the beginning of the war, but now (December, 1915) it was 2.3 per cent.

I regret that I have no reliable statistics from England, but from all that I can gather that same story is told of terrific waste of life and limb early in the war, with gradual and steady reductions in mortality from both wounds and disease as the Medical Department acquired training and experience.

Thus we see what has been accomplished by medical preparedness.

What are our conditions at the present time? A shortage of at least 1,300 medical men exists in the regular Medical Corps of the Army and Navy, while the Medical Reserve is about 10,000 men short. General Gorgas recently stated that "there are needed 10,000 physicians to examine recruits as to their physical fitness, and at least 6,000 men in the medical and ambulance service in France." I quote the following from the last issue of the *Journal of the American Medical Association* upon the "Duty of the Medical Profession":

In the National Guard, when its quota is full, there will be 433,800 men; in the new regular army there will be 293,000 men; and in the first draft of the new national army there will be 500,000 men. This makes an army of 1,226,800, whose mobilization is practically immediate. Such an army calls for 8,600 medical men as a minimum provision. This includes only the medical officers who will actually be with the army in the camps, and on active duty, not those who may go to Europe

with hospital units or the 1,000 men asked for in France, or the large number of medical men that will be required for administrative work.

This is possibly but the beginning. The 500,000 called for in the first draft of the new national army may be followed by a second call for 500,000, possibly for a third 500,000, and even it may be for a fourth 500,000, making an army of 2,000,000 men, as has been prophesied will be necessary. In such an event the medical department of the army will call for a total of 20,000 medical officers, which is nearly 15,000 more than have yet been commissioned. There are in the United States approximately 145,000 physicians; consequently less than one in seven is needed even for full preparedness. Is it possible that there shall finally be difficulty in obtaining voluntarily the medical men needed? We cannot believe so. It is inconceivable that conscription of physicians will ever be necessary. But if we are to get the necessary 20,000 on the volunteer system there must be more eagerness for service shown on the part of our profession than has thus far been shown.

The following information taken from the same paper relates to the appointment in the Medical Reserve Corps.

Qualifications.—The applicant must be a citizen of the United States, between 22 and 55 years of age; a graduate of a reputable medical school; must have qualified to practice medicine in some state, and must be in the active practice of his profession. "Active practice" includes those who specialize in eye, ear, nose and throat, dermatology, neurology, obstetrics, etc.

Procedure.—Note carefully the following procedure:

1. Fill out the personal application blank; read carefully every question before answering it; and write distinctly.
2. After filling out the blank subscribe and swear to it before a notary public or other person authorized to administer oaths. This is very essential; the form is not complete without this procedure.
3. Obtain letters of recommendation from at least two citizens who know you. It would be well if at least one of these were a physician. Then attach these letters to your application blank. Keep copies for your own information and future satisfaction.
4. Communicate with the examining board most convenient to you—a list of boards up to May 17 is printed below—and arrange for an examination. You can send your application blank and letters or take them with you when you appear before the board. When you report to the board for examination, if you have not already done so, present your application blank, your testimonials, your state certificate, and, if of foreign birth, documentary evidence of your full citizenship.

Examination.—The professional examination for the Reserve Corps is not severe, is oral, and practical in character.

Medical Corps.—It must be remembered that there is an urgent demand for members of the Medical Corps. We shall be glad to send application blanks to those who wish to apply for membership in this corps. A physician may be commissioned in the Medical Corps of the Army provided he is between 22 and 32 years of age (34 up to Jan. 1, 1918), a citizen of the United States, and a graduate of a reputable medical college. He must have had also at least one year's hospital training subsequent to graduation, including practical

experience in the practice of medicine, surgery, and obstetrics, and will be expected to present evidence to that effect. Whether or not he is married has no effect on his eligibility to the Medical Corps. He must pass a preliminary examination and a final or qualifying examination in accordance with the rules and regulations which may be obtained on application.

In conclusion I will quote from an article by Robert E. Noble, entitled "The Medical Corps of the Army as a Career." He says in regard to the advantages of the service:

Never since the establishment of the medical department by Congress have the opportunities been so great, never has the medical corps been on a better footing, and never have the officers of the corps been encouraged to work along independent lines and to specialize as now. Socially, there is the association with the highly educated, thoughtful, and purposeful men and women of the service, the absence of the social jealousies often encountered in civil life, the assurance of a home, and a competence during life.

In the medical corps, as in civil life, there is opportunity to promote the progress of medicine and to achieve individual distinction. As in civil life, the advantage to be taken of this opportunity depends on the individual, the real difference being that in the army there is a constant incentive for duty, if not from individual ambition, at least by pressure from higher authority, although the officer who requires constant pressure from higher authority does not last. It is the professionally fit who succeed in the army, as elsewhere, the men who require no incentive other than their own ambition.

DISCUSSION

DR. J. E. DUNN (Groton): Some of us who were in the Spanish-American War may appreciate medical preparedness, knowing the costly mistakes of the past. The hurriedly and politically appointed contract surgeon, lacking training in sanitation and hygiene, has been tried and found wanting. Nurses must have adequate training and careful supervision. In 1898 six male nurses, of whom I was one, enlisted in the Hospital Corps, going direct from Bellevue Hospital to Jacksonville. Four of us contracted typhoid, and two malaria, and one of the latter developed typhoid subsequently while furloughed home. If men trained in the care of disease succumb, the untrained are equally and, perhaps, more liable to suffer. Few measures are more potential in the health and comfort of an army than the careful and adequate training of the Sanitary Corps.

DR. H. T. KENNEY (Pierre): Having served in the Spanish-American War and later in the Mexican border service, in 1916, I am in a position to know the advancement that has taken place in sanitation and prophylaxis. I am sorry that Dr. Spafford did not mention what was done last year. He sort of slighted us. The army of 1898 and the army of 1916 were entirely different armies, and were run in an entirely different way. In 1898 there was practically no sanitation at all, and the result was, that the soldiers died off like flies; but look at what we did in 1916. We took one thousand boys away from here to the border, as poor a place as you

could get from the standpoint of sanitation, and, aside from one man who was killed by being run over by a wagon, we brought all of these boys back to you. (Applause.) This was due to modern sanitation. You will remember that the kitchen in 1898 was at the rear of the Company street and back of it, and not over twenty or thirty feet away was the straddle trench, uncovered and never burned out. Now the latrine is put about fifty yards in the rear of the Company street, it is kept covered with a fly-proof protection, and every day it is burned out with oil or straw or some other combustible material. The kitchen is now at the head of the Company street, a safe distance from the latrines and where it can be constantly observed by the commissioned officer in charge. All garbage and refuse is disposed of by an incinerator, and all food-stuffs must be kept covered; so by these methods we leave no harbor for flies. We burn or oil all land or water-holes adjacent to the camp which would harbor flies and mosquitoes. We also use further precaution for the prevention of diseases that can be prevented, and, therefore, each man is vaccinated for smallpox and given three shots of typhoid prophylaxis. We also teach him to care for himself. We see that he is properly bathed, has clean underwear, and keeps his teeth clean; and we instruct him especially to be sure to wash his hands and clean his finger-nails before handling any foodstuffs. By these and other minor precautions we were able to prevent many diseases that have run rampant through the armies during former campaigns.

DR. MORTIMER HERZBERG (Vermillion): I would like to ask Dr. Kenney in reference to the immorality and the venereal prophylaxis. This is a matter of very great importance, especially in time of warfare; but it seems to be a point that has been rather neglected by the gentlemen of Congress, who do not want us to be known as an immoral nation. I recently read a small pamphlet by Dr. M. T. Exner, who gave a statement of conditions in the army on the Mexican border, which seems to be very fair and very interesting. He said that there was practically no provision at all made for control of prostitution. That even "within the lines of military camps" there were authorized houses of prostitution; and he had seen where soldiers were stationed out in front of doors to keep the men in order until their turn came. If that is a fact, and if these are the conditions that exist, it would seem to me that we have a big job on our hands right there. I would like to know if there is any truth in this statement of Dr. Exner. He has made a study of this subject, and reported in an article in the *Journal of the American Social Hygiene Association*. He says these are the diseases which will be brought back to our civilization. Typhoid can be cured, but syphilis and gonorrhea would have a very bad effect on our civilization; and I think we should realize this.

DR. KENNEY: In reply to Dr. Herzberg's question as to the moral conditions on the border, I believe I can state without fear of any contradiction that the moral condition of the boys on the border was better than in two-thirds of the towns that they left. Consider, if you will, a town that has one thousand boys in it between the ages of eighteen and twenty-five (with the conditions that you people know do exist there from a moral standpoint), and then take that same thousand boys and put them under military control, I assure you

that the conditions in the latter case will be much better than in the former. Of course, you cannot make a bunch of saints out of them.

As to there being camp-followers: That was absolutely forbidden. There were always a few prostitutes in the town close to the camp, but no more in proportion than would be in any town of the same size in South Dakota. The facts obtained by the vice commission down there had an element of truth in them, but on the whole they were misleading and unfair.

I wish to say, in closing, that in the first one hundred and fifty men I examined for this new regiment I found more venereal disease than we had in our regiment during the whole time we were on the border. I am only speaking for the Brownsville district, but I believe the other camps were just as clean as we were.

DR. F. A. SPAFFORD (closing): I thank Dr. Kenney very much for calling my attention to his facts, and I will be very glad to incorporate them in my paper. I think one fault is that we do not publish enough statistics along this line. We do not get them into the medical press. They may get to the Department at Washington, but they are not always made matters of general information.

I have nothing to say except this: Some may ask what has been done in this state along the line of medical preparedness. I wish to say that last year, along in June I think it was, a committee was appointed for the state, which was to constitute the State Committee on Medical Preparedness.

After receiving notification of our appointment we held a meeting at Huron. First, they asked for names for the Medical Reserve; that is, the old Medical Reserve. It has been changed now into the Officers' Medical Reserve Corps, but it was the Medical Reserve then. We sent in at that time about 156 nominations for the Medical Reserve to the Surgeon-General's office. Most of you gentlemen were recommended, and most of you have received application blanks from the Surgeon-General. I do not know how many of you filled out these application blanks—I fear too few. Next, we were asked to send in a list of the hospitals and to make a medical inventory of the state. Dr. Alway furnished a list of the hospitals of this state to the office of the Surgeon-General. Then they asked us to recommend also two men in each hospital to make reports upon the hospital and equipment, and so forth. Blanks were sent out, and about one-half of the hospitals in the state responded. I think a good many did not respond because they did not understand. The blanks that were sent out by the Department to the hospitals of this state, with the exception of a very few, were so elaborate and complicated that I suppose many men did not feel like filling them out. Afterwards, however, many more of the hospitals responded, so that the delinquency at the present time is very small. They then asked us to have a meeting somewhere near Aberdeen to appoint a committee for each of the counties, an Auxiliary Medical Preparedness Committee for each county of the state. This organization, however, has been somewhat changed. I wrote Dr. Simpson, the chief of the Medical Section at Washington and told him that in view of the fact that there were so many counties where there were only two or three medical men and some few counties in which there were no medical men, we would recommend that a district medical committee be

established. We went into that matter very carefully, and made the recommendation for the establishment of a committee of from five to seven in each one of these districts. Some counties, like Brown and Sioux Falls, were made districts of themselves. These district committees had to be informed by the general committee and by Dr. Simpson in regard to their duties. They are just now sending out a request that this committee get busy. There have been other instructions received, and we have had some meetings. At the present time it is requested that a Red Cross Ambulance Unit be organized in this state, and, after it is organized, it will be taken over by the War Department, and it will go into regular warfare. This Unit will consist of the following:

One Captain, 4 First Lieutenants, 1 First Sergeant, 11 Sergeants, 5 Mechanics, 2 Cooks, 2 Assistant Cooks, 20 Chauffeurs, 2 Musicians, 43 Privates—A total of 91 men.

They are very anxious to have a unit from this state. Of course, it costs something to equip such a unit. The equipment of such a unit today costs about twelve thousand dollars. The actual cost a month ago was a little over nine thousand dollars, but, in view of the fact that everything is in the air, they count on about twelve thousand dollars to provide for the organization of this Red Cross Ambulance Unit, which would be taken over by

the War Department for service "somewhere in France" or "somewhere in America," it is hard to tell. But it does seem to me that the medical profession of this state might get together and organize a Red Cross Ambulance Unit. I do not think that permission is being given at this time for the organization of a hospital unit, or a Red Cross hospital unit. I think at the present time that is held in abeyance, but they do want and do ask for the organization of a Red Cross Ambulance Unit in this state, which will consist in all of 91 men, as I have mentioned above. So here is an opportunity. I think at the present time from information I have received throughout the state that the medical men are responding quite generally, although not to as great an extent as would be desirable.

DR. KENNEY: The ambulance service is one of the nicest branches of field service. Its duties are to care for the men on the march and to carry the sick and wounded from the first-aid and dressing stations back to the field hospital or casualty clearing-stations, which are in the line of communication. It is composed of four officers and forty-eight men, and has one advantage over the regimental work, in that, when you are through with your day's work, you are through, and do not have a regiment to care for, as a man in the other service has.

TUBERCULOUS PERITONITIS*

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A complete discussion of tuberculous peritonitis involves a very large field both in medicine and surgery; and, therefore, in this paper I shall, of necessity, need to be brief along some lines, and shall try to bring out only the most important factors.

Etiology.—Tuberculous peritonitis is either a chronic or an acute inflammation of the peritoneum, caused by the tubercle bacillus, and characterized by more or less irregular clinical manifestations, such as fever, pain, tympany, tenderness, and ascites.

The disease does not confine itself to any age, and occurs as early as three years, and as late as seventy years. The greater proportion come between the ages of twenty and forty, although some writers give thirty to forty as the most prevalent age. It seems to predominate in negroes. Women are more susceptible than men according to operative statistics, while men are more often found affected at autopsies.

It is generally, although not universally, agreed that there are two distinct types of tuberculosis, —the human and the bovine. The bovine type

is also called the surgical tuberculosis, as it affects the bones, joints, intestines, and peritoneum.

The tubercle bacilli may gain entrance to the peritoneum in five ways:

1. By lymphatics and glands. The bacilli are ingested or breathed into regions of lymph-glands, and there grow, and finally cause a breaking down of the gland with a resultant liberation of the bacilli.
2. Through ulcers of the intestine.
3. Through the intestine without any demonstrable atrium.
4. Through the urogenital organs; and
5. Through the portal circulation.

There are open lymph-channels on the mucosa and lining of the tonsils and lymph-follicles of the intestines and the appendix. This lymphoid tissue has an affinity for the tubercle bacillus, and because of this it may be unwise to remove tonsillar and adenoid tissue too early in children unless they are definitely diseased, as they may be the means of saving deeper structures from tuberculous changes.

The focus of infection in tuberculous peritonitis is generally either the appendix, Fallo-

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

pian tube, lower ileum, or cecum. Murphy said that the open ascitic form was nearly always due to an infected Fallopian tube.

The predisposing factors are, of course, about the same as those of tuberculosis elsewhere in the body, and are poor hygiene, poor food, hard labor, etc. Cirrhosis of the liver seems to predispose. It is naturally more common in persons having tuberculous foci elsewhere in the body, and is often found in the terminal stages of an acute miliary tuberculosis. It seems to be frequently found in hernial sacks.

Pathology.—The pathology is very varied, and, although the unit is generally the same, the gross appearance has a wide range. Generally speaking, there are three varieties: the acute miliary type with serofibrinous or bloody exudation; the chronic ulcerative variety which has a tendency to caseate and ulcerate, becoming purulent, and often sacculated, each sac containing pus varying in amount up to two pints; and the chronic fibroid type with many adhesions, a greatly thickened peritoneum, with an increased blood supply, and shreds of lymph attached to the surfaces. This last variety has little or no exudation.

In the fibrous adhesive type there are frequently found cyst-like coils of intestines, all matted together in a ball and giving a general appearance of a large cyst. Close inspection will reveal small, fine, white lines at the edges of the intestines where the adhesions originally occurred, and were pulled apart by peristaltic action. A differentiation of such a mass from a cyst is made by sharply tapping the mass with the finger, and, if it is intestine, peristaltic waves may be seen.

Large nodules and small round tumor masses may be found. The omentum may be intensely thickened and even rolled up into a solid single coil. The subcutaneous fat of the abdominal wall is pale and lusterless, and appears unhealthy. The intestines may adhere to one another and have many fistulae connecting them and an abdominal sinus or umbilical fistula may be found draining the abscesses. Pockets may be filled with serous, purulent, or hemorrhagic fluid.

Symptoms.—The symptoms are very variable, and depend on the severity of the infection and the resistance of the patient. There may be no symptoms till the disease is well advanced. There may be only a languid, tired feeling, poor appetite, and a rather full abdomen. Often robust, healthy people are afflicted, and general good health does not exclude it.

A typical case generally will have an afternoon rise in temperature, 101° to even 104° in acute cases, night-sweats, loss of weight, and large tympanitic abdomen, and either ascites or nodules may be found on examination. The pain may be absent or severe, or it may be just abdominal discomfort. The pain is increased generally at the menstrual period. Twenty per cent have pain on defecation, due to straining and thus disturbing the adherent surfaces of intestines. Nearly all have some pain on urination, due to contraction of the bladder and pull on the pelvic structures, as the bladder decreases in size.

Tympany is present when the bowel has lost its tone from the infection present, or due to adhesions and consequent obstruction. Tympany will be present in all advanced cases excepting those in which the ascites is so great, and the contraction of the mesentery is so pronounced that the intestines cannot float up to the surface. Intestinal obstruction may be the first symptom after a long period of fibrous exudation. Sacculated adhesions may give rise to alternating areas of tympany and dullness, and nodules and masses or the rolled-up omentum may be found on palpation. (The temperature may be subnormal and only elevated when pain is present.)

Diagnosis.—The diagnosis may be easy, but in many cases it is difficult, and is frequently impossible. It is generally based on the history of tuberculosis or finding of lesions elsewhere in the body, or evidence of an old tuberculosis, as an old pleurisy rub, or lesions in the lungs shown only by the x-ray. By judicious use of tuberculin as a diagnostic agent many puzzling cases will be cleared up. Microscopic examination of uterine scrapings will often show the tubercle bacillus in urogenital cases. The clinical course helps in diagnosis, but often an exploratory laparotomy is necessary to establish a diagnosis. In all female cases complaining of persistent pelvic pain for which no reason can be found, tuberculosis of the urogenital organs and peritoneum should be suspected, and a thorough physical bimanual examination should be made under anaesthesia to determine if adhesions are present.

The physical findings in the abdomen, *especially* the tumor-like masses, the tympany, the rigidity, the temperature, the ascites, if present, and the tuberculin test,—all help to establish the diagnosis. Subnormal temperature speaks for tuberculosis. Enlarged mesenteric glands can often be palpated, and the general condition of the patient will often aid in diagnosis.

The acute form must be differentiated from appendicitis, strangulated hernia, intestinal obstruction, and typhoid fever. It may be associated with, and be the exciting cause of, appendicitis, and probably if more of the appendices were examined histologically it would be found that tuberculosis of the appendix is more common than is generally supposed. In acute cases, simulating appendicitis, if the history seems like that of appendicitis, then an exploratory operation is justified if the case seems too acute to wait for diagnostic laboratory routine and tuberculin tests. Intestinal obstruction may be caused by tuberculous peritonitis: Typhoid fever may be differentiated by the positive Widal and diazo-reaction, and the positive blood-culture. The clinical course is also a deciding factor.

The chronic forms will have to be differentiated from cirrhosis of the liver, ovarian cyst, and cancer of the peritoneum, as well as other chronic forms of peritonitis. Cirrhosis of the liver often accompanies tuberculosis of the peritoneum, but, if alone, there are no fever, no tenderness, no pain, and no irregular tumor masses. The liver and spleen are both enlarged, and often there is an alcoholic history and history of repeated hemorrhages.

Ovarian cysts may be very difficult to differentiate. The growth of cysts is *slower*. They are more clearly defined. The patient generally has no fever, no emaciation, no loss of strength, not so much abdominal pain and tenderness, no tympany till the swelling is great, often no other tuberculous lesions, and tuberculin tests are negative. Ovarian tumors have a definite pedicle at first, and are not fixed, and some operators claim that ovarian tumors give rise to a characteristic ovarian facies.

Carcinoma of the peritoneum is generally so rapid in its growth, and the loss of weight and strength so great, that differentiation is not difficult. The finding of a primary focus or metastasis is confirmatory.

Chronic pyogenic peritonitis can be ruled out by a negative history and negative physical findings. The tuberculin tests would be negative in chronic pus cases and the focus of infection probably could be demonstrated.

In all doubtful cases where a diagnosis could not be established otherwise, an exploratory laparotomy would be indicated.

PROGNOSIS

The prognosis varies, depending on the extent of the infection, the virulence of the organism,

the resistance of the patient, the amount of associated tuberculous lesions elsewhere in the body, and the treatment. Fifty per cent are cured by medical management, and a large part of the other 50 per cent can be cured by surgical intervention. Of course the mortality is high in those cases in which a generalized miliary tuberculosis is found. It is remarkable how well individuals recover from what threatens a fatal termination, and they generally get well. This is especially true of the exudative variety. If ulceration or *concurrent* infection is present the prognosis is greatly decreased, and, if fecal fistulæ form, they are very chronic and very difficult, and sometimes impossible, to heal. After operations in the exudative type they generally recover rapidly. In operative cases, if the operation is a failure, the patient generally dies in a few months after operation. Many are relieved for a few years and die of pneumonia or tuberculosis elsewhere. Often the tuberculous lesions of peritoneum will heal completely but the patient die of tuberculosis of the lungs.

Treatment.—The treatment depends on the variety, but in all cases, whether medical or surgical, the general principles of treatment of tuberculosis must be followed. In general, the writers seem to agree that medical treatment should be tried in all cases first, and given a reasonable time to get results, and then if there is no improvement, surgical measures should be adopted.

The disease was first treated surgically by accident by Spencer Wells, in 1862. He made the mistake, so frequently made now, and diagnosed ovarian cyst. On opening the abdomen, he found a tuberculous peritonitis. The therapeutic result was good, and since then surgical treatment has been fast becoming popular. The reason why surgery is of value is explained in different ways by different writers. The following are some of the reasons for good results:

Removal of focus of infection.

Release of tension and extra fluids and the toxins contained in the fluids.

Stimulation of the peritoneum to greater bacteriolytic activity, and the production of a new, thicker layer of cells to cover the focus of infection.

Hildebrandt and Weit claim that whenever serum is suddenly evacuated, it is replaced by a serum having a greater bacteriolytic power. Another theory is that the modification of intra-abdominal pressure causes an increased circulation and more active absorption. And another theory

claims that the admission of light and air into the cavity is the factor that makes it valuable, and supporters of this theory claim that, if the operation is done in normal saline solution, the results are not so valuable.

Whatever the reason, it is agreed that simply opening the abdomen and emptying it of its fluid contents greatly aid in the recovery of the patient, and 60 to 70 per cent of tuberculous peritonitis can be cured by surgery. The exudative serous form gives the best prognosis with surgical treatment. The adhesive cases and even the serous cases should first be treated medically. If the exudative type does not respond within five or six weeks, and the adhesive variety within six or eight weeks, then it is best to operate. It is best not to operate in the acute stage if the diagnosis is certain. An operation is indicated in distinctly ascitic forms, in cases with a demonstrable focal lesion which can be removed, such as a tuberculous cecum, tube, or appendix, and in all those cases which do not improve within eight weeks under recognized medical treatment, such as hygiene, climate, actinic sun rays, x-ray, serums, and vaccines.

Operators vary as to technic. The older operators all are agreed that there should be no drainage. Oschner, however, claims that results are better if a drain is used. He uses a glass tube covered by four layers of gauze, and leaves it in the cul-de-sac or lower abdomen till drainage ceases,—a period of seven to ten days. Other operators claim that convalescence is much quicker, and fecal fistulae are not so frequent, if no drainage is used. The majority of operators seem to favor the latter view. It is very important from a prognostic standpoint not to get a secondary infection and a fecal fistula, as a fecal fistula is very chronic and may persist for years.

In most cases a midline incision is made, and the peritoneum opened up and, maybe, drained or irrigated. The focus of infection is sought for, and is very often found to be a tube or an appendix. If it can be removed it should be, although too much peritoneum should not be removed, and care should be taken not to tear the intestine, as a fecal fistula is almost sure to persist. If the appendix is found to be studded with tubercles the same as the surrounding serosa, and no definite certain focus of infection is found, the operator should refrain from removing the appendix lest a fecal fistula result. On the other hand the tubes may be removed if they look suspicious, as there is no danger of fistula from them and they

are often the focus even if they do not appear to be. The omentum may be removed up to the colon if it is all rolled up in a single coil. All dangerous adhesions should be carefully removed if it can be done conservatively. If there are fecal fistulae or pyogenic pockets due to secondary infection, the objection to drainage would not hold, and drainage probably would be the best way to treat it.

Kelly recommends the use of four grams of iodoform in the abdominal cavity. Some operators, as Carl Davis, of Chicago, use about one ounce of 1 per cent formalin in glycerine prepared twenty-four hours before use. Others claim that results are just as good without these irritants, and so do not use them.

As to tuberculin, and its use as a diagnostic and therapeutic agent, there seems to be a wide variance of opinion. It is generally agreed that it is as valuable for tuberculous peritonitis as for tuberculosis elsewhere, and some very encouraging reports come from its use in tuberculosis of the respiratory system. Dr. St. Clair, of Honolulu, Hawaii, chose 309 cases at random from patients in his tuberculosis sanitarium, and in four years without tuberculin, 27.2 per cent of the number were arrested in their course, and were able to return to work. In 507 cases in the next four years with tuberculin 50.1 per cent were able to go back to their former work. Patients begin to put on weight right away, and gain from three to six pounds in the first month of treatment. The tuberculin must be fresh, or the weight will vary inversely as the freshness of the preparation.

In using tuberculin some writers claim that failure is due to one of three things,—the tuberculin itself, improper dosage, or unfavorable cases. There are two methods of controlling its use,—by the opsonic index and by temperature control. In the opsonic index method the dosage is begun very small, and doubled each time. It is given daily every second day, or semi-weekly as long as the temperature-rise is not too great and the opsonic index is increasing. In the temperature-control method, continued small doses are given. It is claimed to be just as effective and more safely administered. In the above series of cases St. Clair never went above 1/300 of a milligram and rarely over 1/500 of a milligram. Some give one thousand times as much, or about two milligrams, and even as high as 10 c.c. have been given. The rise in temperature occurs within forty-eight hours after the injection, and some writers will not admit that any rise in

temperature after forty-eight hours is due to the tuberculin. The temperature may remain high, however, and if, after seventy-two hours, the temperature is highest and there is no fall to normal in seventy-two hours more, the tuberculin should be stopped or the dose decreased. If the amount of albumin in the sputum remains low or is decreasing the tuberculin dosage can be increased. Schlossman, of Germany, says tuberculin is very valuable in children, but that it does not produce antibodies till large doses are given, and he claims that dosage should begin low and go up very slowly. The child reacts with vigorous production of antibodies when it has reached a tolerance for about 1.5 grains (1 decigram) of tuberculin. Ringer gives the following contra-indications for its use:

1. Very weak and emaciated persons. Feed them up first.
2. Mixed-infection cases of the third stage.
3. Hemorrhages. Better wait till hemorrhages have ceased.
4. Heart disease, when the reaction to the tuberculin may cause a break in compensation.
5. Marked increase of the pulse-rate continuous with its use.
6. Marked loss of weight beginning and continuing with its use.
7. Complications, such as diabetes, nephritis, cirrhosis, hysteria, and epilepsy.

He states that many people under open-air treatment slowly going down hill improve, and get better under tuberculin. It decreases the toxemia, and he places its value in order as follows: hygiene, diet, rest, and then tuberculin.

Ray says that peritonitis, joint tuberculosis, lymph gland and meningeal tuberculosis and lupus should be treated with Koch's old tuberculin, as it is of bovine origin, while pulmonary tuberculosis is probably not so much benefited by the old tuberculin.

Mendel highly advocates arsenic in conjunction with tuberculin, and he claims that tuberculin causes a hyperemia at the focus of infection, and therefore a greater affinity for the arsenic, and arsenic causes a greater food and blood supply and therefore the repair is much faster. An easy simple guide to go by in giving tuberculin is never to give enough to cause a febrile reaction.

J. B. Murphy said tuberculin and the x-ray was the treatment for tuberculous peritonitis in many cases. He attributed the great value of tuberculin to the fact that the disease is a simple, and not a mixed, infection. Up to the time

of tuberculin, healed tuberculous ulcers of the intestine were never demonstrated.

Bandalier reports 500 cases, of which 202 had tubercle bacilli in the sputum. In five to six months on tuberculin treatment, in 64.9 per cent the sputum had become negative. E. Lowenstein reports 682 open cases, and all were given 10 mg. or more of old tuberculin. Four negative sputum reports were required before the sputum was declared negative; 53 per cent got a negative sputum, and before that only 15 per cent of positive sputum cases could be treated so as to become negative by the hygienic-dietetic cure.

Much discussion has arisen as to the kind of tuberculin to use. They vary generally in strength only, and all contain tubercle bacilli protein, and the test of whether or not they contain this protein is their ability to produce a reaction. Human and bovine tuberculin, according to Hamman, of Johns Hopkins, are so identical in their reactions upon infected animals that we may neglect to ascertain their source. Tuberculin is not an antitoxin, nor a neutralizing agent for poisons produced by disease. It is not a bacteriolytic agent. It acts only by stimulating the patient to elaborate protective substances and to produce an inflammatory reaction about a focal infection. It is a whip to the natural powers of protection. Patients treated with tuberculin who are greatly emaciated and worn out, and are already overwhelmed by infection, are probably harmed by its use. Some do not give it to patients who have fever, but use the prolonged rest to get the temperature normal before beginning treatment.

Variation in dosage is very great, and it is generally conceded that about 0.001 milligram of old tuberculin is a safe beginning dose. The dose can be safely doubled till 0.1 mg. is reached, and then it should be raised cautiously up to 1 mg., provided there is no reaction. Reactions should be avoided, and a word about reactions may be of use. There are three kinds of reaction,—general, focal, and local. The local always appears before the general, and it is a good index to watch to see that a general reaction does not occur. The local reaction consists of swelling, pain, soreness, and redness. The focal reaction depends on the part involved, and in case of lupus it will be manifested by swelling, redness, pain, etc. If it is the lungs, there will be increased cough, pain, increased expectoration, etc.; if in the joints, there will be a decrease in mobility, more pain, and maybe crepitus. The

general reaction consists of fever, malaise, headache, anorexia, nausea, indefinite pains, etc.

Billings begins by giving 0.001 mg. of old tuberculin, and increases by opsonic index. The interval of dosage is generally three to four days till 1 mg. is reached, and then once a week or every ten days if there is no reaction. If a reaction occurs, do not give any for two weeks, and then begin with a slightly smaller dose. The aim is to get the greatest amount of focal reaction without getting a general reaction. The dosage may be increased up as high as 10 grams, but most observers claim that 1000 c.mm., or 1 gram, is the largest dose that can be given without deleterious effects.

In giving tuberculin tests Billings says to be careful about giving a test to a patient with certain tuberculosis of the adrenal, kidney, or lung,

as it may set up a generalized tuberculosis, and cause rapid death. Many other men say there is little danger of this. In suspected cases it is well to keep a two-hourly temperature curve, and, if there is no temperature above 99°, then give the minimum dose. Billings gives 1 mg. of old tuberculin at 10 p. m. The reaction comes eight to twelve hours later. If no reaction with 1 milligram, then next night give 3 milligrams, and then if there is no reaction on the third night give 5 milligrams, and, if the patient has tuberculosis, it will then show up. Generally 3 milligrams will give positive reaction if tuberculosis is present.

Used judiciously, tuberculin is valuable, both as a diagnostic and a therapeutic agent, and is a valuable adjunct in the treatment of tuberculous peritonitis.

PRESCRIBING LENSES AFTER THE USE OF CYCLOPLEGICS*

By D. L. TILDERQUIST, M. D.

DULUTH, MINNESOTA

The use of cycloplegia for refraction is a very valuable method and the only one we possess for determining in the most exact manner the refraction of the eye. Unfortunately, the method carries with it special difficulties and special chances for error. In our enthusiasm for a method which yielded such exact results as this one does, we naturally concluded that all or nearly all of the error found ought to be corrected. We were then naturally surprised to have a patient who had been refracted most carefully come back with complaint of eye-aches, headaches, blurring of vision, "drawing of eyes," etc., finally to see him wander away and obtain relief through methods that we considered unscientific and inexact. We gradually learned that our failure was due to not taking into sufficient account the previous activities of the ciliary muscle; we learned that the ciliary muscle in hyperopia having been compelled to carry two or three diopters of accommodation beyond the normal had developed an unusual strength and vigor, and would not abandon all at once its former habits; also that the ciliary muscle in myopia, having had very little or no call for accommodation, had degenerated and weakened to such an extent that it could not without disaster attempt to take up normal activity. I believe that the

one error into which a cycloplegic leads us is *over-correction*, whether in hyperopia or in myopia.

In the first place, all authorities seem to agree that the cylindrical error should be corrected in full, excepting only those cases which call for very high cylinders, say four or five or more diopters, and which have previously worn no correction. The discussion then limits itself to the prescribing of the proper sphere.

Hyperopia—Authorities differ as to the basic principle in the correction of hyperopia. Americans generally agree that we should aim at giving the greatest possible correction, the object being to relieve the patient of all his symptoms, lessen undue strain of the ciliary muscle, and place the eye in as nearly a normal condition as is possible. European authors, among whom Fuchs may be quoted, incline to the view that simple hyperopia should be corrected by glasses only so far as is required to relieve the asthenopia. He also advises that glasses should be worn only for near work if there are no symptoms of discomfort. For this purpose it is generally deemed sufficient to give glasses which are somewhat stronger than the manifest hyperopia. They argue that, if the ciliary muscle be relieved of all, or nearly all, its extra work, its activity will become weakened to such an extent that, if the patient is accidentally deprived of his glasses,

*Read before the Minnesota Academy of Ophthalmology and Oto-Laryngology, Minneapolis, March 9, 1917.

he will be unable to see. The objection to following this principle would seem to me to be that it would be quite difficult to determine, except by actual use, how weak a glass will just relieve the symptoms, and it would also necessitate a too frequent change of glasses since the degree of manifest hyperopia constantly increases with age. The argument seems to me to be in favor of the teachings of the American school of giving as full a correction as is possible. The question then comes: How are we to determine after a cycloplegic how large a sphere the patient will accept with comfort? We can determine it best by trying the patient out

table does not appear, but, instead, there is a less definite rule as to the amount to be deducted. Hartridge, of London, states that the manifest plus one-third of the latent hyperopia should be ordered. In all works on refraction these general rules are modified by many conditions, of which the following are the most important:

First, Age: Children will accept a larger correction than adults. And this is about all that the text-books give, although this factor is most important, and lately has been subjected to very definite treatment, of which I will speak later.

Second, Occupation: Those who use their eyes a great deal for near work, such as stu-

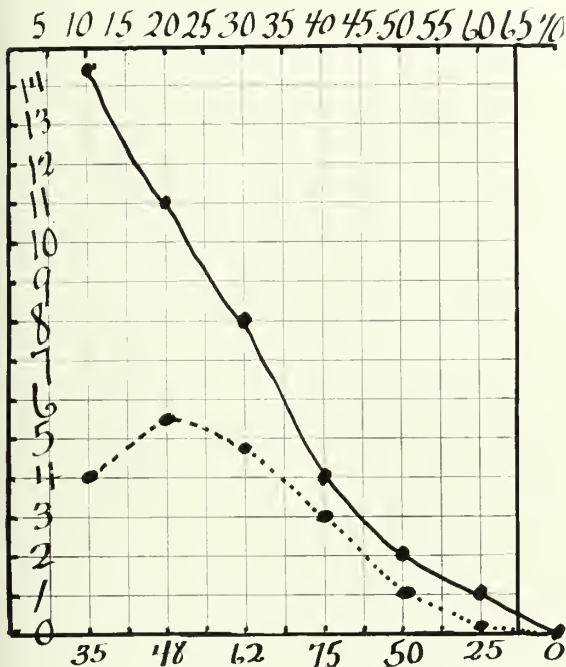


Chart 1. The solid line, possible accommodation; broken line, available accommodation; figures at left, possible diopters; figures at top, age; figures at bottom, percentage.

after the disappearance of cycloplegic effects. This method, however, has the practical objections, especially after the use of atropine, of delaying the time when the patient obtains his glasses and also of losing that period of partial cycloplegia during which it is easiest for the eyes to accustom themselves to the correction. Thornton, in his earlier editions, lays down a general rule that, if the sphere under cycloplegia amounts to plus 1 diopter, a plus 0.25 should be deducted, and, if the sphere is plus 1 to plus 3, a plus 0.25 to a plus 0.75 should be deducted, and so on, the deduction approximating 15 to 25 per cent of the total. In his later editions this

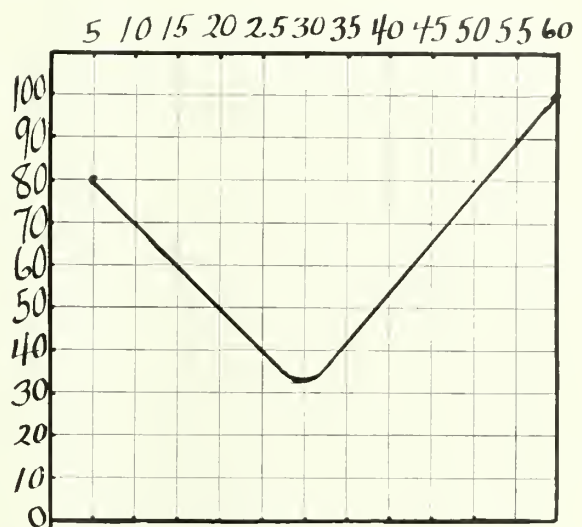


Chart 2. Line shows amount of hyperopia the patient will accept at first "glassing." Figures at left, percentage; figures at top, age.—Dr. C. W. LeFever.

dents, book-keepers, etc., should be given a fuller correction than those who do outdoor work and use their eyes mostly for distance.

Third, Presence of Esophoria or Exophoria: The matter of convergence is very closely connected with that of accommodation since the muscles of both functions are supplied by the third nerve. By relieving some of the accommodation we lessen the stimulation sent along the third nerve to the ciliary muscle, and in the same degree reduce the stimulation to the interni for convergence. For that reason patients who have a tendency to esophoria will tolerate a fuller correction than the average. Conversely, in cases of exophoria, where the convergence is weak, we weaken still more the convergence by correcting the accommodation fully, and hence the exophoric should be given *weaker* glasses than the general rule calls for. This offers an explana-

tion of the symptom popularly expressed as "drawing of the eyes." The accommodation has been relieved to such an extent that the muscles of convergence do not obtain sufficient stimulation; the "drawing" is their more or less frantic tugging to hold the eyes in line when they (the muscles) do not receive enough nervous support.

Fourth, Manifest Hyperopia: It is a safe assertion that the patient who accepts by the manifest method a large proportion of hyperopia will tolerate fuller correction than the patient who will accept only a small amount of the same.

If it is difficult to secure definite rules in regard to the correction of hyperopia, it is many times as difficult to lay down definite laws to be followed in myopia. The factors involved are

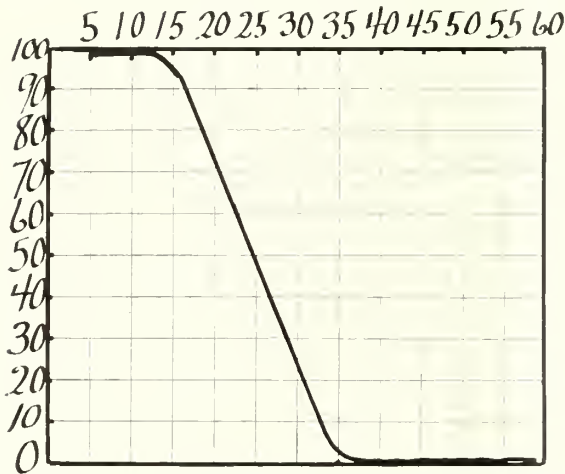


Chart 3. Line shows amount of myopia the patient will accept at first "glassing." Figures at left show percentage; figures at top show age.—Dr. C. W. LeFever.

many, ranging from the condition of the patient's eyes down to the matter of his general health. In hyperopia the eyes are usually healthy, but in myopia they are often "sick," weakened, and partly atrophied with partial loss of function. In order to do justice to the myope, there should be a most complete examination, not only as to the condition of the eyes, but also as to the general conditions which could have bearing upon the vision. But, since nothing is here to be dealt with except purely ophthalmic factors, I will let these general considerations pass.

The most careful measurements should be made of the patient's ability to accommodate. In hyperopia the ciliary muscle is often enlarged and strengthened beyond normal on account of increased use. In the myope the reverse is true. As the far point is sometimes at ordinary read-

ing distance or even closer, there is sometimes very little call for activity on the part of the ciliary muscle. The result is an absent, or a very weakened, power of accommodation. If we give a correction to the myope which gives good distance vision, and consequently calls for the ordinary accommodation of three diopters for near, we may throw an undue effort on his ciliary muscle and do an immense amount of damage. The structures may be unable to stand the strain, and, as a result, the myopia is increased. I believe this fact has given rise to the teaching, especially by the French school, that the main aim in the correction of the myope should be a correction that causes no accommodation on the part of the patient. We have repudiated that teaching, and have laid down as basic principle that the myope should be compelled to use as much accommodative power as is possible without doing damage, and should be trained to increase gradually that same accommodative power. To determine the amount of accommodation that should be called for, the accommodative range should be mapped out by a careful determining of near and far points. That being done, we base our judgment upon two main considerations.

First, The Age of the Patient: The factor that age plays is also dealt with very scantily in our books in the discussions of myopia. Beyond saying that children and young people have better accommodative powers than older people, there is very little given.

Second, The Amount of Myopia Present: Thorington has divided the myopes in this respect into three groups:

Class 1. In this class there is a low degree of myopia,—one to two diopters,—in which the fundus shows no degree of change, and in which the ciliary muscle is still active. In these the correction found under cycloplegia may be given for both distance and near.

Class 2. Adults who have not previously worn glasses. In these the ciliary muscle may be weak, and the accommodative power therefore small or none at all.

Class 3. Cases that require unusually strong glasses, and where the refraction will depend not so much upon the condition of the eye itself as upon psychological or pathological factors.

And now I come to the consideration which prompted me to present this paper. Any work which yields to us a definite rule of procedure, even if that rule cannot always be followed, adds

greatly to our practical usefulness. Some years ago I had the good fortune of coming in contact with Dr. C. W. LeFever, of Philadelphia, and with the investigations he had carried on for a number of years in regard to the relation of age to the amount of correction that would be accepted. The results of these investigations are given with Dr. LeFever's permission. From observations on a great many individuals he had found that the hyperope would accept with comfort a gradually *lessening percentage* of his total hyperopia from childhood up to about the age of thirty-two. This decrease was fairly constant in different individuals, so constant that a very good average could be taken for definite ages. His tabulations charted gave us a picture like the one here presented. (See Chart 3.)

At the age of 10 a child will accept approximately 80 per cent of his total hyperopia. At the age of 15 he will accept approximately 60 per cent. At the age of 20, 50 per cent, or one-half, and at the age of 30, or possibly 32, only about 30 per cent of the total hyperopia. From that time the percentage increases gradually, until at the age of 60, when the power of accommodation is nearly lost, he accepts the full total of his hyperopia, or 100 per cent.

That a patient will accept a smaller percentage of his total error at 30 than he will at 10 or 15 may seem strange. Possible light upon the subject may be that furnished by observers as to the availability of the total power of accommodation. A child has a very large accommodative power. As is well known, we do not begin to grow old as far as accommodation is concerned at the age of 45 or 50 when we first begin to use glasses for near, but the process of loss of accommodation is a continuous one from childhood up to the age of 60 or 70. The significant fact is that, while the child has a very high power of accommodation, its available accommodation—and by that we mean the accommodation which it can actually use for sustained effort—comprises a small percentage. As the individual grows older the percentage of available accommodation increases, so that the adult at the age of 30 or even 35 can use from 60 to 70 per cent of his total (accommodative power) for sustained effort, while children at 10 can use only 30 or 40 per cent. This harmonizes with the common experience that the adult can use for sustained effort in all activities a much larger part of his full strength than can the child. But in the same degree in which the muscles gain

efficiency and endurance they lose what might be called flexibility; and a ciliary muscle in an adult which has acquired during many years a larger proportion of available strength, objects in a proportionate degree to relaxing its tonus. And so, while the accommodative proportion increases up to about 32, the part of it which we dare to correct lessens.

Applying this then in a practical way: If we refract a patient of the age, say, of 20, Dr. LeFever would give him for constant use one-half, or 50 per cent, of his total hyperopia; if the hyperopia is combined with astigmatism, he calculates that the cylinder calls for the same accommodative effort as a sphere of one-half the strength. For instance, if he finds an error of plus 4 combined with a cylinder of plus 2, he says the total hyperopia is plus 4 and plus 1, or plus 5; 50 per cent of plus 5 is plus 2.50. But the cylinder absorbs 1 diopter of this, hence the correction for the sphere should be plus 1.50 combined with a plus 2 cylinder.

In prescribing, this rule cannot be followed blindly, but is subject to the same other considerations that were mentioned above. In prescribing glasses for the patient who has previously worn a correction he bases his calculations in the same manner upon the *difference* between the old correction and the total error. After calculating the percentage upon this difference it is added to the old correction as the prescription.

Again, in myopia this same investigator's observations tabulated show that up to the age of 15 the total myopia as found under cycloplegia can be prescribed both for distance and near. From that age up to about the age of 35 the myope who wears no correction gradually loses all his accommodative power, so that for each year after 15, 5 per cent less of the total error is corrected. In other words, if the patient is to wear the same glasses for distance and near, he would be given at the age of 15, or below, full correction; at the age of 20, about 75 per cent, leaving the distance vision somewhat blurred for the sake of not overburdening a weakened ciliary muscle. At the age of 25, about 50 per cent; at the age of 35 glasses should be prescribed which call for no accommodative effort whatever, the same as in presbyopia under ordinary circumstances.

These tables have been followed as a working guide during the last five years, and have proven themselves to be mainly correct. This work gives definiteness to one factor in our difficulties in pre-

scribing, and, if followed and modified by the other factors, good judgment and common sense, will be found to be of very high value, and will enable the prescriber to relieve the symptoms and still avoid the so common pitfall of prescribing

after cyclopelgia, namely, that of over-correction. It is not intended as a substitute for post-cycloplegic investigation, but, when possible, the latter should be used as a corroborative procedure.

REPORT OF A CASE OF DIVERTICULUM OF THE URINARY BLADDER WITH POST-MORTEM OBSERVATIONS

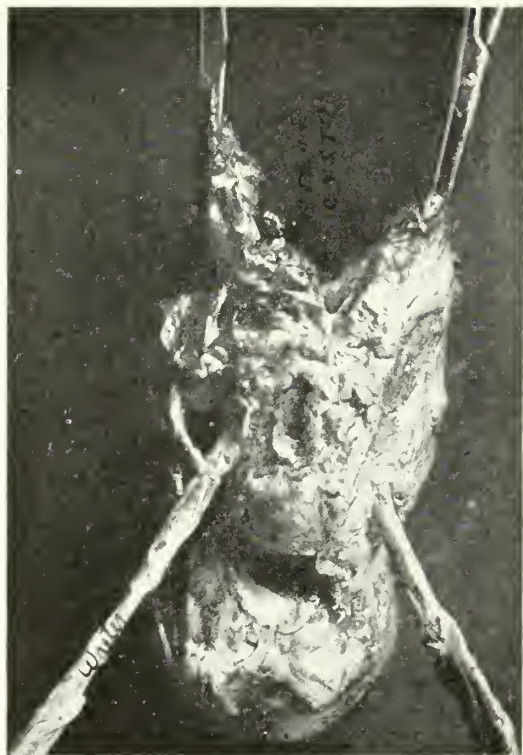
By E. H. McINTYRE, M. D.

VIRGINIA, MINNESOTA

Male, age 33, laborer, married.

Family History: Negative.

Personal History: Denies gonorrhea and syphilis; was well up to August, 1915, when he noticed some difficulty in urination with pain over the lower part of the abdomen; there was no urethral discharge, and he did not consult a physician.



Present Illness: Began September 20, 1916, when he sought aid for retention of urine. A catheterized specimen at this time showed albumin, few pus cells; sp. gr. 1015, alkaline reaction. Daily lavage was instituted, and in a few days he returned to work. On October 9 he was admitted to the hospital for treatment on account of a similar attack. Examination at this time

was negative as to the heart and lungs. Abdomen was negative, except for some tenderness over the bladder area. Reflexes were normal. The patient said he had lost about fifteen pounds in the last three months. A soft catheter could be introduced into the bladder without difficulty, but we were unable to introduce the cystoscope. Rectal examination revealed a mass the size of a lemon above the prostate, although it was difficult to ascertain the upper limits. It was soft, and upon pressure there was no pain. Repeated examinations showed some change in the size of this mass. The prostate was normal. The patient left the hospital after three days, returning for lavage, which seemed to give him much relief. He was not able completely to empty his bladder, and the washings gave an ammoniacal odor.

On November 25, following a hunting trip in which he suffered severe exposure to cold, he was re-admitted to the hospital. His pulse was 90, and temperature 101° on admission, accompanied with chills and severe pain in the bladder and perineal regions. The bladder was distended, and catheterization was difficult. Owing to the onset of sepsis, due to the absorption of the bladder contents, a cystostomy was performed on November 26. Upon exploration of the bladder, marked trabeculation was found, and at the base below the insertion of the ureters there was an opening the size of a dime leading to a large pouch.

The patient died the third day after the operation.

Post-mortem Examination. Examination revealed a thickened bladder, well bathed with purulent fluid. Both ureteral openings were dilated. There was marked trabeculation of the wall. At the base there was an opening leading to a large thin-walled diverticulum, with a capacity greater than that of the bladder. There was a right-sided pyelonephritis with small abscesses in the cortical region of the right kidney.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

SEPTEMBER 15, 1917

WHAT IF THE DOCTORS SHOULD STRIKE?

Most every organization in the country has its troubles, and the majority of these organizations show their discontent by inaugurating strikes, some of which are just, but very many are unjust. The various labor troubles that have occurred throughout the country have evidently caused a great deal of disorder, personal inconvenience to both employer and employee, and great suffering to the families of the laboring man while on a strike; but these questions seem not to trouble organizations very much, and, if they do, they take them as a matter of duty or of pennance or a demand for the rights to which they believe they are entitled.

Undoubtedly, the progress of the world has been helped by legitimate strikes, and, doubtless, many employers have realized that their employees may organize, and may, as a body, demand improvements, and, undoubtedly, employers have been compelled to change methods of treating their employees, and in this way the employee has secured benefits which have been very helpful. However, it is conceded by most thinking people that a good many of the strikes are

not justified, particularly those which cause discomfort and distress and great inconvenience to people who are not in any way benefited by a strike—rather do they suffer the inconveniences of the many in order to improve the supposed inconveniences of a few.

The most serious strike that happens throughout the country is that connected with the distribution of milk; and Minneapolis has just been dishonored by a strike, fortunately of short duration, in which the milk deliverers refused at midnight to go to work the next morning, giving their customers no opportunity to lay in a supply of milk for children or invalids, to say nothing of the discomfort to the average citizen. This strike lasted less than thirty-six hours, during which time the patrons of the milk depots or delivery houses were obliged to shift about or go after their own milk. Such a thing should not be tolerated, and a class of employees who endanger the public health by such extreme measures should be punished in some way, or should be deprived of certain of their accrued benefits.

The editor has often wondered what would happen if the doctors should decide to strike. Is such a thing conceivable? And yet doctors are organized, that is, they are organized into societies,—city societies, country societies, state organizations, and national organizations. Doctors are belittled, sneered at, scoffed at, and ridiculed, not only because of their organization, which is purely for educational advancement, but because the people, and attorneys particularly, feel that if doctors are organized in any way they are a clannish lot, and that they will stick together and hold out and support one another whether right or wrong. This is a misconception of the doctor and his ideals. Very few men go into the practice of medicine with the expectation of reaping a fortune. A few men, of course, acquire large means, but commonly their fees and accumulated profits are greatly exaggerated. A doctor may be very busy, but he may not be taking in a large sum of money. He is busy taking care of the sick; and, whether the sick are rich or poor, he is busy just the same. Doctors are not given credit for the amount of charity work they do, nor for the labor, the expenditure of energy, and the time wasted in the care of needlessly sick people, as well as of those who demand medical attention. Look for a moment at the hospitals, both in the country and in the city, managed by a staff of medical men,—surgeons, specialists, all classes of doctors,—who give their time gratuitously uncomplainingly,

and very often to the disturbance of their private work, and yet comparatively few people realize this fact. The average person, when he needs a doctor or thinks he needs one, demands immediate attention, and, if he does not get it, he is unpleasant, peeved, or domineering in his attitude toward the medical man. He does not think perhaps that someone else is sick and that the doctor is employed, or that he has a certain schedule which he must follow, or that certain other patients may need his attention more than the complaining one.

Granting that these statements are reasonably true, what would the people do if the doctors in large cities banded themselves together, demanded certain emoluments, and refused to attend a sick person unless assured of their fees or unless bills which had been previously presented, perhaps many times, were not promptly paid? Then, if the doctors should agree among themselves to enter into such a compact, what would the newspapers think and what would the people think of such deliberate and drastic methods of increasing the suffering among the rich and the poor sick alike? The first thing perhaps that would enter the minds of some would be that medicine should be paternalized, and that federal and city authorities should commandeer the services of the physician in order that the sick people might be properly cared for. Another result would be that many of the sick would go to the druggist and either obtain patent medicine or counter prescriptions or would perhaps rush to the healing cult who practice an art, which is not, however, the practice of medicine.

Fortunately, these things are never likely to happen among medical men however much they may be abused or however much time is required of them to do their work. No matter how many telephone calls reach the office or the house of a physician at all hours of the day or night, does the doctor very often assert his rights and insist that he be given certain latitude in his professional career? Doctors need recreation and time, just as other people do, and many of them take a certain amount of time and recreation; but how often does it occur to the layman that the doctor is not infrequently overworked, that too many demands upon his time and attention are required, and, unless he promptly responds to the summons, constantly before him, that he himself, like his patients, will begin the toboggan slide?

During the last few months, and since the beginning of the war, both abroad and at home, the

cost of living has gone up to unprecedented heights; and yet the doctor plods around and distributes his time and pills in much the same manner that he did years ago. His fees have not increased materially, if at all, and may be in many instances less than they were before the high cost of living came to confront him. This is not a bid for increased fees, and it is hardly necessary to suggest to the awakening doctor or awakening public that the fees will be increased. Doctors who can see their way to charge more, and particularly to charge for telephone service or medicines which they distribute, usually with a free hand, may gain a trifling advantage; but, as far as can be learned, the general run of fees has not been increased, nor is there much likelihood of an increase.

The doctor is frequently not a very good business man, although the business side of medicine has been materially improved in the last few years, but people do not realize that doctors receive patients many of whom are financially irresponsible and who are cared for by him regardless of the fact that he knows that he may never be paid for his services, and the amount of money in accounts lost, is, in a busy man's practice, a very large item. Then, too, physicians who maintain private hospitals suffer in the same way from those who are indifferent as to their indebtedness. A patient comes into the hospital, forlorn and sick, and perhaps some friend comes with him who assumes the responsibility for the bill. They are unable to pay in advance, and, out of the kindness of his heart, the physician takes care of the patient and sometimes finds that he is burdened for weeks or months with such a case. These are the people who growl, grumble, and complain of both the doctor and the hospital. They are a detriment in every way. They do not improve the doctor's professional standing, and do nothing but diminish his financial returns.

A SERIOUS MATTER TO THE PROFESSION

When a medical man of high standing in his profession—whether this stand is high in the estimation of his fellow practitioners or of laymen—deliberately commits an act that tends to determine, because it is one of many common acts, the character of the profession, and gives it a character not worthy of gentlemen, such act becomes a serious matter to the profession.

It is of such acts that we now speak, and we speak, not in haste, but after years of consideration upon the subject. If we shall seem to speak

plainly, we shall certainly not speak rashly; and we shall speak solely in the interest of the profession, for the subject has not the remotest personal bearing to ourselves.

It is an old and an honorable custom for a committee making up the program of a medical society meeting to invite one or two distinguished men outside of the society to present papers at such meeting, especially if an annual meeting. Such a paper, if delivered before a state or a national association, is dignified by the name of "oration in medicine" or "oration in surgery." These proper and dignified terms lend to the honor conferred upon the guests of the occasion; and honor conferred clearly suggests *noblesse oblige*.

And, as all our readers know, it is the well-nigh universal rule of every medical society, whether such rule is written or implied, that a paper presented before it upon its invitation, shall be published in the society's transactions, if such transactions are published, in either book or journal form. At least two excellent reasons for such a rule suggest themselves: The members of the society not present at the meeting are entitled to the opportunity of reading any paper presented before the society, and the society is entitled to the honor and the benefits that may be conferred upon it by the character of the paper presented and of the man thus honored by its invitation.

But how is this plain obligation of an honored guest sometimes met? As the answer we shall give to this question may be imputed to insufficient or meager data gained in our experience, or, perhaps, to the fault of magnifying what seems to us a grievous mistake, we want to say that nearly a score of such orations or papers annually pass—or should pass—through our hands, coming from national, state, district, and county medical bodies; and, as our experience covers a score or more of years, our data can hardly be called meager. And we have a like experience in submitting the stenographic reports of many hundreds of discussions on other medical papers to the authors of such discussions; and as one part of a discussion is often essential to other parts, particularly to the essayist's closing discussion, a "few casual remarks" may take on more importance than the discussion otherwise possesses, thus imposing an obligation to revise and return the same—an obligation not much inferior to the importance and the obligation, respectively, imposed by the paper itself.

Our answer to the query, if given in percentage form, would seem incredible, we are sure, to everyone of our readers who has not had experience as editor of a medical journal or as secretary of a medical society. And we are very confident that few of our readers would deny that such neglect in a matter of unquestioned obligation, especially when it is deliberate, as evidenced by the failure of the author to respond to numerous letters requesting his paper or discussion, is reprehensible in the extreme, and is evidence of a lack of the common courtesies of life that seriously reflects upon the profession.

We cannot refrain from suggesting to medical men guilty of this serious fault that they ask themselves what causes their fellow practitioners will probably ascribe to their failure to meet so plain an obligation.

THE MISSISSIPPI VALLEY CONFERENCE ON TUBERCULOSIS

One of the notable health gatherings of the year will be the Mississippi Valley Conference on Tuberculosis, which convenes in the Twin Cities on October 8-10. This meeting possesses especial significance in view of the startling situation facing the warring countries in handling this problem as revealed by Dr. Hermann Biggs in his survey in France.

In order that this situation may be presented in an authoritative manner, Dr. Charles L. Minor, of Asheville, N. C., President of the National Association for the Study and Prevention of Tuberculosis, will be one of the speakers, together with others of national reputation.

The medical side of the problem will also be stressed. Not only will there be expert discussion of this phase during all three days of the meeting, but also Tuesday morning's program will be devoted entirely to the medical problem. This session will be held at the University of Minnesota, where a model dispensary with examination for incipient tuberculosis, x-ray demonstration, artificial pneumothorax, etc., will be shown.

Of the other features of the conference the outstanding one will be a mass meeting at the Auditorium and at one of the large down-town churches, Tuesday evening, October 9, at which such authorities as Dr. Minor, Dr. Mayo (W. J.), Dr. Gaylord, etc., will discuss tuberculosis, cancer, social hygiene, and the army medical service.

President Burton, of the University of Minnesota, has been asked to preside at the Auditorium meeting.

BOOK NOTICES

FIRST LESSONS IN SPOKEN FRENCH FOR DOCTORS AND NURSES. By Ernest H. Wilkins, Algernon Coleman, and Ethel Preston. Chicago: The University of Chicago Press, 1917. Price, 54 cents postpaid.

Too high praise cannot be given for the admirable, common-sense methods adopted in the preparation of this manual for doctors and nurses. Its aim is to help the doctor and the nurse carry on such conversation as is essential in their work when a wounded or sick French soldier enters the hospital.

We venture to say, no work comparable with it in merit, in its line, has been, or is liable to be, published.

GENERAL SURGERY. By Albert J. Ochsner, M. D. (Series 1917). Chicago: Year Book Publishers. Price, \$2.00; price of series of ten volumes, \$10.00.

This volume is the first to be edited by Dr. Ochsner, who pays a fitting tribute to the memory of the late Dr. John B. Murphy, the former editor.

The volume maintains the high standards set by its annual predecessors. It affords the general surgeon an opportunity to acquaint himself with the latest and best in surgery.

Military surgery receives noteworthy mention. The complications resulting from warfare, especially tetanus, as well as the various methods of treating infected wounds, each method with its advocates and adherents, are likewise discussed.

Perhaps the only regrettable part of the volume is the absence of European literature, except that pertaining to warfare.

FOOD PREPAREDNESS FOR THE UNITED STATES. By Charles Fletcher. Boston: Little, Brown, and Company.

Never was a book more timely than Mr. O'Brien's, and rarely will one find a difficult subject handled more wisely.

The author went to Germany in the fall of 1916 to study economic conditions in that country, and when he saw the trend of things, with unrestricted submarine warfare in sight, his trained mind saw the vast importance of food conservation. Like Chéradame, he sounds a warning to the world, accompanied, however, by constructive ideas, which cannot be overlooked with impunity.

Mr. O'Brien has had the hearty co-operation of U. S. Government officials in the preparation of his work, and his aims are highly commended by Major-General Leonard Wood.

The chapter on "Applied Scientific Nutrition" shows the author to be a radical vegetarian, and some of the statements show how easily causes are mixed,—for instance, when an outdoor life and a vegetarian diet produce good results, it is far from a conclusive argument that the vegetarian life is the sole cause of such results.

BOTANIC DRUGS: THEIR MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS. By Thomas S. Blair, M. D., Fellow of the American Medical Association; Fellow of the Harrisburg Academy of Medicine; Editor of

"The Medical Council"; Author of "Public Hygiene," "A Practitioner's Handbook of Materia Medica and Therapeutics," and "Pocket Therapeutics"; formerly Neurologist to Harrisburg (Pa.) Hospital; Etc. Price, \$2.00. The Therapeutic Digest Publishing Co., Cincinnati, O., 1917.

The introduction gives a brief history of the development of botanic remedies, many of which are recognized as of value in medicine today, but a large number are only employed in sectarian medicine and as domestic remedies.

The fallacy of clinging to many of the old botanic remedies which are only of historic interest, but are still held in esteem by the Homeopathic and Eclectic schools of medicine, is made emphatic, while, on the other hand, others are held worthy of a place in therapeutics though they possess but a single beneficial action. The author lays stress on the fact that drugs do not "cure" disease, and that the day of empirical therapeutics and mysticism is past. Both remedy and dose should be selected to fit the case in hand; and the selection should be based on sound physiological grounds. A plea is made for modernizing botanic materia medica and therapeutics based on modern pathology and diagnosis, and for the deletion of obsolete remedies.

Part I deals with pharmaceutical considerations, giving a brief outline of some of the important pharmaceutical processes.

Part II points out the advantages and the limits of pharmacology, and concludes with a discussion on botanic-drug standardization.

Part III is an alphabetically arranged list of botanic remedies.

The Latin title, the family to which the plant belongs, the pharmacopoeias in which it may be official, and other useful knowledge pertaining to the drug are given. The pharmacology of the more important active drugs is given in a condensed form.

The therapeutics and dosage of practically every remedy is given, and in many instances, it reads very much as though it were written by a member of the Eclectic school. The author, however, has derived his therapeutic data from a wide range of books, and has found it necessary, in many instances, to give the therapeutics furnished by the Eclectic and Homeopathic schools of medicine since little data bearing on the action of the drug is to be found elsewhere. Furthermore, the author has given many of these same drugs an extensive clinical trial, and has been fair in the expression of an opinion as to their value.

The book can be recommended to the physician who is disposed to prescribe drugs and preparations of botanic origin, and for the general knowledge it contains pertaining to botanic drugs.

—BROWN (E. D.).

LOCALIZATION ET EXTRACTION DES PROJECTILES. Par. L. Ombrédanne, Chirurgien des Hôpitaux, Professeur agrégé à la Faculté de Paris, et R. Ledoux-Lebard, Chef de Laboratoire de Radiologie des Hôpitaux de Paris. Avec 225 figures dans le texte et 8 planches hors texte. Paris, France: Masson et Cie, Editeurs. 1917. Price, per volume, 4 francs.

In the preface to this monograph, it is stated that it is not a scientific treatise, but only a brief presentation of practical every-day methods employed by the doctors in their work at this hospital. At the conclusion of the

war, it is the intention of the authors to embody their experience in a work more elaborate. We hope they will live to see the fruit of that time, when sufficient leisure will be at their disposal to correlate the experiences of the ambulances, the hospitals, and the laboratories of the army. The authors say:

"We are living in a period when the antiwar conditions already have become somewhat hazy. One has to imagine today that there was a time when surgeons searched for foreign bodies without having the *x*-ray at their disposal.

"We have related here the services the *x*-rays have rendered us daily in the search for known or suspected projectiles in the bodies of the wounded. Many times a projectile, the presence of which was unknown, would cause unexplained and persistent symptoms. The *x*-rays have enabled the surgeon to locate such projectiles, and indicate the path of access. Often, also, by chance, there are discovered by radiosopic examination unknown or dormant projectiles. Until the most recent wars, these have not been removed, and yet many of the wounded, probably ignorant of the fact that such projectiles were in their bodies and feeling no discomfort, have recovered. This tolerance of the tissues of the body should not be overlooked. The wisdom of extracting dormant projectiles is thus seen to be debatable; it becomes necessary only if the trauma and risk of the operation are less than the discomfort felt by the patient. But how are we to know in advance the consequences of any surgical interference, if the *x*-rays have not disclosed the location of the projectile? We owe it to the *x*-rays that we are now able to balance the advantages and the inconveniences attending the extraction of a dormant projectile. Finally, the *x*-rays do more. They guide the researches of the surgeon, lead him to the foreign body by the most direct or most favorable path of access, with the minimum amount of trouble and without failure.

"We have seen the real help the electrovibrators can give, but also the too frequent occasions when they fail. The *x*-rays are infinitely more trustworthy and sure. The first thought that occurs to the surgeon is to look through the screen himself or to put on the *x*-ray bonnet and to extract with pincers the foreign body that he sees. But then he operates blindly, his hands exposed to the nocif rays. The procedure appears to be simple, but the surgeon has not the right to expose his hands needlessly to the *x*-rays.

"At the beginning of the war the idea was prevalent that only radiograms could furnish the exact positions of foreign bodies without misleading the surgeon and with no risk of radiodermatitis. These radiograms were made by the radiologist, who has become the surgeon's assistant. In that particular method the surgeon is to that extent dependent on the radiologist. At times he ascertains the position of the projectile, with the aid of the compass, and during the operation he uses the compass to indicate, in an indirect and intermittent manner, the direction of the path of access. The compass is an intermediate indicator. The information furnished by it is relative. That instrument can only indicate, after having been placed at a certain point determined by a graphic method. The location of the projectile thus furnished is relative, indicating to the surgeon the probable starting-point. Sometimes, on the contrary, the radiologist looks directly at the projectile through the screen or bonnet, and shows it with the point of his

needle. The information so obtained is direct; its value is absolute, and not relative. It is no longer the control by two degrees according to the compass; it is the direct control. It is this second method of intermittent control that we believe to be superior to all others, because it is simple, it eliminates risk of error, and it is without danger to the surgeon. *Cito, tuto, et jucunde*. While some employ it exclusively others combine the use of the compass, but operate on a radiologic table, ready to utilize the intermittent control of the screen in case of failure. The latter method completely guarantees the surgeon against failure in locating and extracting the foreign body. We have striven during several months to improve and give precision to the technic. Numerous eminent surgeons have come sometimes from distant countries to see us operate. All have acknowledged the advantages of our method.

"It became apparent to us that we might be conferring a benefit on the profession if we explained our method in a more detailed manner than has been possible in our several communications, by publishing this monograph of our experience at the Lycee Descartes Hospital, in the course of our radiosurgical collaboration."

—LAURENT.

NEWS ITEMS

Dr. J. W. Kurz, of Cook, died last month at the age of 33.

Medical students who have spent one year in their studies are not subject to draft.

Dr. M. O. Oppegaard has moved from Minneapolis to New London, his former home.

Lieut. Chas. R. Tompkins was married to Miss Jessie McLean, of Grafton, N. D., recently.

Dr. A. G. Beyer, of Red Wing, was married last month to Miss Marion E. Oldt, of Dubuque, Iowa.

Dr. A. A. McLaurin, of Rapid City, S. D., was married last month to Miss Wallin, of the same place.

Dr. E. W. Gaag, of Havre, Mont., has purchased the practice of Dr. O. E. Stewart, of Bricelyn, Minn.

Dr. Philip E. Stangl, of Paynesville, was married on Sept. 6 to Miss Josephine Friberg, formerly of St. Cloud.

Mrs. Dr. T. J. Strong, of Williston, has gone to her old home in Virginia to await her call to the Red Cross Service.

Dr. Henrietta P. Miller, of Cloquet, has given up general practice to devote herself to medical work in the public schools.

Dr. F. L. Fisher, of Kildeer, N. D., has moved to Dickinson, N. D., and become associated with Drs. Perkins and Nachtwey.

Dr. Chas. T. Granger, of Rochester, has added to his staff Drs. A. Hennesey, of Chicago, and E. R. Winne, of Syracuse, N. Y.

Sixty-four towns in Minnesota will have free school nurses this year for short terms, gained through the sale of Red Cross Seals.

Dr. H. G. Irvine, of Minneapolis, has been tendered the directorship of a bureau of venereal diseases to be established in California as a war measure.

Dr. E. J. Hagen, of Williston, N. D., is recovering from an operation which he underwent at Rochester last month, and will soon be able to resume his work.

The name of Dr. R. J. Quinn, of Burke, S. D., belongs in the list of physicians who have tendered their services to the Medical Reserve Corps from South Dakota.

In the sixth Medical District of North Dakota, of which Bismarck is the center, over fifty per cent of its members have tendered their services to the Medical Reserve Corps.

Dr. A. J. McCannel, of Minot, N. D., and Dr. F. O. Brigham, of Stanley, N. D., have gone to San Francisco for training prior to active service in the Medical Officers' Reserve Corps.

Dr. J. F. Snyder, of Hazelton, N. D., died last month at the age of 53. Dr. Snyder was a pioneer physician of North Dakota, having located in Braddock when the place had but few inhabitants.

Miss Mabel Fodness, formerly school nurse for Grand Forks county, has been appointed Field Investigator in Tuberculosis and School Sanitation by the North Dakota Public Health Service.

Dr. A. C. Dean, a graduate of the School of Medicine of the University of North Dakota and of Jefferson Medical College, was recently married in Pittsburgh, Penn. Dr. Dean is a lieutenant in the U. S. Navy.

Dr. Frederick F. Laws, of Minneapolis, died last month at the age of 68. Dr. Laws was one of the founders of the Norwegian Lutheran Deaconess Hospital of Minneapolis, and had practiced in Minneapolis thirty-two years.

The health of the St. Paul public school children will be looked after this year by thirteen nurses and a school physician. As Dr. Meyerding, the former school physician, is in the army, his successor will be elected the last (29th) of this month.

Dr. John E. Engstad, who came to Minneapolis several years ago, has returned to Grand Forks, N. D., to resume his surgical work in that city. He is now associated with Drs. Witherstine and Wilson, the new firm name being Drs. Engstad, Witherstine & Wilson.

Mr. G. E. Richardson, U. of N. D., 1916, who has been in charge of the Bismarck branch of the State Public Health Laboratory for the past year, has been appointed instructor in bacteriology and pathology in the School of Medicine of the University of North Dakota.

Health and Happiness Week will be observed in Minneapolis, October 6 to 12. Dr. C. L. Minor, President of the National Tuberculosis Association, and Dr. Walter A. McCaw, of the U. S. Medical Corps, will be among the distinguished speakers at the public meetings.

The American Association of Official Surgeons will hold its annual meeting at the Congress Hotel in Chicago on September 27-29. The mornings will be devoted to surgical clinics at the Fort Dearborn Hospital, and the afternoons and evenings to papers and roundtables.

As THE JOURNAL-LANCET goes to press, word is received of the accidental death of a son of Dr. Jane F. Kennedy, of Minneapolis, which occurred at Fort Sill, Oklahoma. This promising young man had graduated at Harvard this summer, and had joined the aviation corps after failing to get into the engineer corps because of slight physical disability. We tender Dr. Kennedy, on behalf of the entire medical profession of the Northwest, the sincerest condolences in this sad hour of sacrifice and grief.

A committee of over three hundred representative surgeons of the American College of Surgeons will meet in Chicago on October 19-20 to consider the standardization of hospitals. The following are among the points in standardization to be considered: incompetent operators, unnecessary operations, fee-splitting, training of nurses and internes, equipment of clinical laboratories, and the keeping of case-records. Minnesota has seven members on the committee: Drs. J. E. Moore, A. T. Mann, and A. W. Abbott, Minneapolis; Drs. A. Schwyzer and W. A. Dennis, St. Paul; Dr. W. H. Magie, Duluth, and Dr. D. C. Balfour, Rochester. North Dakota sends to the conference Dr. E. P. Quain, Bismarck; Dr. R. D. Campbell, Grand Forks; Dr. A. J. McCannel, Minot; and Dr. Murdock McGregor, Fargo.

The Minnesota State Board of Health has notified all health officers in the state of the meeting of the State Sanitary Conference in St. Paul on October 10, and that their expenses will be paid by the State. Dr. W. S. Rankin, secretary of the North Carolina State Board of Health, and other distinguished men will address the Conference.

In the absence of state laws co-ordinating the public-health interests of North Dakota, the State Board of Health, the Public Health Laboratories, and the Anti-Tuberculosis Association have voluntarily co-ordinated their activities, and will act as a unit in the future, to be known as the North Dakota Public Health Service.

NORTH DAKOTA PHYSICIANS WHO HAVE JOINED THE MEDICAL OFFICERS RESERVE CORPS

Aranson, J. O.....	Bismarck	Hillis, S. J.....	Berthold	Pryse, R. C.....	Dawson
Aylen, J. P.....	Fargo	Jackman, J. E.....	Minot	Quain, E. P.....	Bismarck
Bailey, F. H.....	Fargo	Jamieson, G. V.....	Devils Lake	Redman, F. E.....	Mott
Baldwin, W. P.....	Cassellton	Jones, C. S.....	Williston	Reedy, P. G.....	Tappen
Brenckle, J. F.....	Kulm	Kaess, A. J.....	Fargo	Rice, P. F.....	Solen
Brigham, F. O.....	Stanley	Kirkham, J. H.....	Langdon	Robertson, C. W.....	Park River
Brini, C. L.....	Cooperstown	Lindner, E. R.....	Munich	Rucker, F. T.....	Mott
Campbell, R. D.....	Grand Forks	Livingstone, J. W.....	Valley City	Ryan, D. E.....	Hankinson
Claspel, C. J.....	Grafton	MacDonald, A. C.....	Fingal	Saylor, H. L.....	Cogswell
Countryman, J. E.....	Grafton	MacKenzie, J. R.....	Carrington	Skovholt, H. T.....	Williston
Dahleen, H. E.....	Hankinson	Maercklein, E. H.....	Ashley	Smith, J. A.....	Noonan
DePuy, T. L.....	Jamestown	Maertz, W. F.....	Lidgerwood	Strauss, F. B.....	Bismarck
Duncan, C. E.....	Sanish	McCannell, A. J.....	Minot	Strong, T. J.....	Williston
Eastman, L. G.....	Hazen	McNab, A. B.....	Beach	Swenson, A. W.....	Bisbee
Engesather, J. A. D.....	Brocket	Meland, O. N.....	Grand Forks	Vallancey, J. H.....	Fessenden
Franklin, Benjamin.....	Rugby	Mella, Hugo.....	Bismarck	Verrett, B. D.....	Rolla
Ginsberg, William.....	Omeme	Monteith, George.....	Hazelton	Voss, Carl.....	Hettinger
Goss, E. L.....	Carrington	Nachtwey, A. P.....	Dickinson	Wentz, H. B.....	Verona
Graham, M. P.....	Carrington	Nickerson, B. S.....	Mandan	Westley, M. D.....	Cooperstown
Greaves, J. P.....	Sherwood	O'Brien, W. P.....	Egeland	Wheelock, D. O.....	Epping
Griebenow, F. F.....	Bismarck	Ostrander, A. J.....	Enderlind	Youtz, H. L.....	Willow City
Halgren, J. A.....	Bismarck	Plant, J. H.....	Montpelier		

HOSPITAL FOR SALE

A small modern up-to-date hospital for sale cheap. Good location. For particulars address M. Miller, Lemon, S. D.

LOCATION OPEN

Physician wanted in a town of 500 in a good farming country; good business. Address L. E. Sasse, Druggist, Vienna, S. D.

OFFICE FOR RENT IN MINNEAPOLIS

A good office for dentist, with two physicians, in Masonic Temple, rent reasonable. Inquire 504 Masonic Temple, Minneapolis, Minn.

OFFICE FOR RENT

I will sublease my office in the Syndicate Building, Minneapolis, three rooms and reception-room. Rent, reasonable. Address 577, care of this office.

POSITION OPEN

A surgeon with a large private hospital in Minnesota, who expects to go to the front, wants some able man to take his place. One experienced in the practice of surgery will be preferred. Write at once. Address 543, care of this office.

PRACTICE FOR SALE

In Southern Minnesota town of about 1,100. Two main line railroads, electric light, city water, good schools, churches, banks, etc. First-class, thickly settled American farming territory. Very satisfactory competition. County and insurance appointments. Price and terms reasonable to satisfactory party. Address 574, care of this office.

PHYSICIAN WANTED AT ONCE

In a good town in Western Minnesota. Address 576, care of this office.

PRACTICE FOR SALE

Practice goes to purchaser of my office fixtures. Good Minnesota town, with good schools, water, and electric lights. Good crops and good collections. No near competition. Have done no surgery. Catholic preferred. Address 550 care of this office.

PRACTICE FOR SALE

Hospital and practice in Northern Minnesota. Average business per month, \$1,000. Hospital and office fully equipped, x-ray and electrical instruments included. Collections 85 per cent. Buyer must be able to do surgery. Address 542 care of this office.

X-RAY APPARATUS FOR SALE OR EXCHANGE

I will sell at a low price or exchange for an automobile (roadster) a Scheidel-Western 18-inch x-ray coil and high-frequency combination equipment in first-class order. Roadster must be in A-1 condition. Address Dr. P. W. La Plount, Suite 424, 622 Nicollet Ave., Minneapolis. (Phone, Nic. 2925.)

POSITION WANTED

Am 43 years old, have had one year's hospital experience, two years of postgraduate work, and eighteen years' private practice. Am married and have family consisting of one child. American born. Will consider partnership. Registered in North Dakota, South Dakota, and Iowa. Address 569, care of this office.

X-RAY MACHINE FOR SALE

A static x-ray and high-frequency machine; complete equipment; man or motor driven; good order. Bargain. Address P. O. Box 702, Aberdeen, S. D.

LOCATION WANTED

I wish a location in North Dakota. Have some money to invest. Give size of practice, population, price, etc., in first letter. Address 561, care of this office.

FOR RENT—FULLY EQUIPPED OFFICE IN METROPOLITAN BANK BUILDING, MINNEAPOLIS

Two physicians will share their splendid suite of offices in the above-named building with a third physician—internalist preferred. Address 565, care of this office.

ASSISTANT WANTED

An assistant in mining work. Small hospital, Northern Minnesota. Salary \$150. State school, experience, age, and habits. Give references. Address 555, care of this office.

PHYSICIAN WANTED

I want a physician to substitute for me during my period of army service. Nothing to buy. General practice in village of 400. Good territory. Address 562, care of this office.

ASSISTANT WANTED

Assistant wanted to general surgeon in Southern North Dakota. State qualifications, references, nationality, religion, and salary expected in first letter. Address 572, care of this office.

DESIRABLE OFFICES FOR RENT

I desire to sublet my offices in the P. & S. Building, Minneapolis, for part or whole time. Will rent one or three private rooms with share in reception-room at very reasonable rates. Address 567, care of this office.

PRACTICE FOR SALE

Practice offered to physician who buys my equipment invoiced at \$600. Modern office rooms in village of 800 about 60 miles from Minneapolis; good territory. I am in the Medical Reserve, and leave soon. Address 573, care of this office.

PRACTICE FOR SALE

In Minnesota city of 2,300. Population German and Bohemian. Good train service; 50 miles from Twin Cities. Practice goes to physician purchasing my office equipment valued at \$500. Going into army. Address 559, care of this office.

ASSISTANT WANTED

Assistant resident physician, single, in a rapidly growing tuberculosis sanatorium of one hundred beds. By January 1, 1919, will have three hundred beds. Salary \$900. Excellent chance for advancement for the right man. Address 553, care of this office.

ASSISTANT WANTED

I want an assistant to help me in my general practice in village of 400 in North Dakota, the next six to eight months. Prefer single man, recent graduate, well qualified. Will pay liberal salary to right man. Write and send references. Address 568, care of this office.

PRACTICE FOR SALE

At cost of office equipment, practice averaging \$400 per month. German-American community. Four churches, two banks; large saw-mill; good farming country. Competition right. Am going to large city by Sept. 15 if possible; therefore must sacrifice. Address Box 254, Frazee, Minnesota.

POSITION WANTED

Permanent salaried position by a physician, graduate of class A + school, with ten years' experience in hospital, general, and contract practice. Competent in all lines except major abdominal work. Married, clean habits, and best of references as to character and ability. Salary \$200 a month to start with, and chance for advancement. Address 564, care of this office.

ASSISTANT WANTED

I want an assistant. Will pay good salary and furnish everything to some young man who has been disqualified for military service or who is above draft age. I want a man who has had laboratory training in bacteriology and stomach work. This position will allow the acquiring of technic in Röntgenographic and general x-ray work. Address 560, care of this office.

POSITION WANTED

Assistantship or locum tenens opening desired. Minnesota preferred; would consider North Dakota. Norwegian, licensed in Minnesota. City of 2,000 or over preferred. Do eye, ear, nose, and throat work, and refraction, as well as general work. Aged 37, active, and willing, and not subject to draft. Write fully as to what you have to offer. Address 570, care of this office.

PRACTICE WANTED

An unopposed general practice running \$4,000 cash or better per year, without major surgery, by an experienced, married physician not subject to draft. Will lease or rent office and residence for definite period of time from a doctor joining the army. Prefer village with some modern improvements, and thickly settled territory. Can give best of references. Address 566, care of this office.

PRACTICE FOR SALE

Wanted a physician to take over a well established unopposed practice of \$4,000 to \$5,000 in a growing town of 550 on main line of railroad in southwestern Minnesota. Collection 99 per cent. Includes insurance, county poor appointments and small stock of drugs. Will bear inspection. Terms to suit. Am commissioned in Medical Reserve Corps. Address 563, care of this office.

PRACTICE FOR SALE

A \$4,500 practice in a modern Southeastern South Dakota town of 700. One competitor in a territory of 20 miles. Population is 50 per cent Scandinavian. A Swedish physician can do \$6,000 to \$8,000 business without surgery. Good chance for nose and throat surgery. Will sell practice, office fixtures, and drugs for \$300. Address 549 care of this office.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Fueral Septicemia	Accidental Deaths
Albert Lea	1,253	1,432	0															
Alexandria	4,500	6,192	6															3
Anoka	2,681	3,001	2															
Austin	2,769	3,972	2															
Barnesville	2,474	6,960	8															
Bemidji	1,326	1,353	1															
Benson	1,183	5,099	6			1												1
Blue Earth	1,525	1,677	2															
Brainerd	1,900	2,319	2															
Breckenridge	1,524	8,526	15								1							1
Canby	1,282	1,840	2															
Cannon Falls	1,100	1,528	1															
Chaska	1,239	1,385	2	1														1
Chatfield	2,165	2,050	1															
Cloquet	1,426	1,226	1															
Crowston	3,074	7,031	4						1									1
Dawson	5,359	7,559	10		1				1								2	1
Detroit	962	1,318	0															
Duluth	2,060	2,807	4															
Duluth	52,968	78,466	93	6	1	7	1	0	7	7	0	0	0	1	2	5	1	7
East Grand Forks	2,077	2,533	1															
Ely	2,572	3,572	5	1														
Eveleth	2,752	7,036	7	1		2			1									
Fairmont	2,440	2,958	2															
Faribault	7,868	9,001	12	1		1											1	
Fergus Falls	6,072	6,887	8														1	
Glencoe	1,788	1,788	3			1											2	
Glenwood	1,116	2,161	1															
Granite Falls	1,454	1,454	0															
Hastings	3,811	3,983	2	1														
Hutchinson	2,495	2,368	3															
International Falls		1,487	3															
Jordan	1,270	1,151	1															
Lake City	3,142	3,142	2															
Le Sueur	1,937	1,755	1														1	
Little Falls	5,774	6,078	10			2												
Luverne	2,223	2,540	2															
Madison	1,336	1,811	0															
Mankato	10,559	10,365	15		1				2								1	
Marshall	2,088	2,152	3															2
Melrose	2,591	2,591	1															
Minneapolis	202,718	301,408	328	26	13	18	6	1	3	0	1	0	9	2	5	33		17
Minnetonka	2,146	3,056	2															
Montgomery	1,979	1,267	1															
Moorhead	3,730	4,840	8	1													3	
Morris	1,934	1,685	0															
New Prague	1,228	1,554	2															
New Ulm	5,403	5,643	7		1	1												
Northfield	3,210	3,215	4														1	
Ortonville	1,247	1,774	3															
Owatonna	5,561	5,658	14												2	3		
Pipestone	2,536	2,475	2	1	1													
Red Lake Falls	1,666	1,526	3															1
Red Wing	7,525	9,048	14	1		2												1
Redwood Falls	1,661	1,666	3	1														
Renville	1,075	1,182	2	1														
Rochester	6,843	7,844	58	2	2										1	12		
Rushford	1,100	1,011	0															
St. Charles	1,304	1,159	2															
St. Cloud	8,663	10,600	15	1														1
St. James	2,102	2,102	2															2
St. Paul	163,632	214,744	227	35	4	7	5	0	2	0	0	0	6	0	1	17		21
St. Peter	4,302	4,176	3															
Sauk Centre	2,154	2,154	2															
Shakopee	2,046	2,302	3	1	1													
Sleepy Eye	2,046	2,247	2															
South St. Paul	2,322	4,510	3			2												
Staples	1,504	2,558	1															
Stillwater	12,318	10,198	12													2		
Thief River Falls	1,819	3,174	5	2											1			
Tower	1,111	1,111	0															
Tracy	1,911	1,826	6															2
Two Harbors	3,278	4,990	2														1	
Virginia	2,962	10,473	16	1	1	3	1											1
Wabasha	2,622	2,622	2															
Warren	1,276	1,613	0															
Waseca	3,103	3,054	4			1												
Waterville	1,260	1,273	0															
West St. Paul	1,830	2,660	1						1									
Willmar	3,409	4,135	5															
Winona	19,714	18,583	31	4				1							1	3		7
Winthrop	813	1,043	0															
Worthington	2,386	2,385	3	1														

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	0															
Aitkin	1,719	1,633	2	1														
Akeley			2															
Appleton	1,184	1,221	2															
Belle Plaine	1,121	1,204	2															
Biwabik		1,690	1															
Bovey		1,377	0															
Browns Valley	721	1,053	0															
Buffalo	1,040	1,227	1															
Caledonia	1,175	1,372	1							1								
Cass Lake	546	2,011	1															
Chisholm		7,684	1															
Coleraine		1,613	1															
Delano	967	1,031	1									1						
Farmington		1,024	0															
Fosston	864	1,055	1															
Frazee	1,000	1,645	0															
Grand Rapids	1,428	2,239	1															
Hibbing	2,481	8,832	5															1
Jackson	1,756	1,907	1			1												
Janesville	1,254	1,173	2													1		
Kenyon	1,202	1,237	2															
Lake Crystal	1,215	1,038	0															
Litchfield	2,280	2,333	3															
Long Prairie	1,385	1,250	0															
Madelia	1,272	1,273	1															
Milaca	1,204	1,102	0															
Mountain Lake	959	1,081	2			1												
Nashwauk		2,080	0															
North Mankato	939	1,279	1												1			
North St. Paul	1,110	1,404	1															
Osakis	917	1,013	0															
Park Rapids	1,313	1,850	2			1											1	
Pelican Rapids	1,033	1,019	0															
Perham	1,182	1,376	0															
Pine City	993	1,258	1															
Plainview	1,038	1,175	1													1		
Preston	1,278	1,193	1															
Princeton	1,319	1,555	2													1		
St. Louis Park	1,325	1,743	2															1
Sandstone	1,189	1,743	1															
Sauk Rapids	1,391	1,818	0															
South Stillwater	1,422	1,745	0															
Springfield	1,511	1,343	2															
Spring Valley	1,770	1,482	5		1	1									1			1
Wadena	1,520	1,817	0													1		
Wells	1,520	1,820	0															
West Minneapolis	2,017	1,755	2															1
Wheaton	2,250	3,022	0															
White Bear Lake	1,132	1,300	0															
Windom	1,288	1,505	2						2									
Winnebago City	1,944	1,749	1															
Winnebago City	1,816	2,555	2													1		
Zumbrota	1,119	1,138	0															
STATE INSTITUTIONS			5															
Anoka, Asylum			0															
Faribault, School for Blind			0															
Faribault, School for Deaf			0															
Faribault, School for Feeble Minded			1															
Pergus Falls, Hospital for Insane			18	6	1	2												
Hastings, Asylum			5															
Minneapolis, Soldiers' Home			2															
Owatonna, School for Dependents			0															
Red Wing, State Training School			0															
Rochester, Hospital for Insane			13															
Sauk Centre, Home School for Girls			0															
St. Peter, Hospital for Insane			17	5		2												
St. Cloud, State Reformatory			0															
Stillwater, State Prison			0															
OTHER PARTS OF STATE			696	63	8	41	12	2	6	0	4	0	3	1	13	52	4	54
Total for state			1860	163	37	97	25	4	27	7	7	0	18	4	30	157	7	130

*No report received. REGISTRAR not doing his duty.
147 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

HEPCO FLOUR

Hepco Flour is a flour with a reduced starch content that has been found very helpful in the diet of diabetics and all persons who feel the need of a flour rich in protein and fat, and lean in starch.

The Waukesha Health Products Company, of Waukesha, Wis., manufactures this flour, and also puts up Hepco Dodgers and Grits ready for use.

MRS. MOREY'S PRIVATE MATERNITY HOME

Mrs. Morey conducts a maternity home at 2014 26th Ave. So., Minneapolis, which, we believe, is fully worthy the confidence of medical men. All such homes are real homes, good or bad, for the unfortunate; but only the good ones deserve to exist. By *good* we mean a due amount of charity and consideration for inmates, no extortion of whatever nature, comfortable quarters, and proper medical care of the inmates.

We believe Mrs. Morey conducts such a home, and the slightest evidence to the contrary would bar her card from our columns.

THE MILWAUKEE SANITARIUM

The Milwaukee Sanitarium is a great *sanatorium*, not because it is great in size, for it is comparatively small in size, but because in its beautiful location, in its grounds and buildings, in its equipment, and in the personnel of its staff, it is pre-eminently an establishment for the treatment of the sick.

One cannot explain in the limits of three or four brief paragraphs why it is pre-eminent, but the physician who will visit the institution, or send a patient to it, or even investigate it by correspondence with that degree of care he would give to the investigation of some form of diagnosis or treatment, will learn to his entire satisfaction the kind of work that Dr. Richard Dewey and his associates have long done at this Wauwatosa (Wis.) "health resort," or sanatorium.

BATTLE CREEK SANITARIUM

Recent advances in medical science have found a new significance in the diastase enzyme and fat contents of the blood. The enzyme has the power to convert starch into dextrose, and this ability becomes greater in diabetes, nephritis, and some other diseases. Thus the quantity of diastase enzyme in the blood is in direct proportion to the severity of the disease, and this factor has been held to be a better control than the estimation of blood sugar. In diabetes, nephritis, and various forms of anemia, the amount of fat in the blood increases with the gravity of the ailment. With the aid of the nephelometer, it is now possible to measure accurately small quantities of fat in the blood, and this test is now of direct value in diagnosis. The nephelometer, which was formerly used mostly in research work, therefore has now a practical value in the medical laboratory. Its use has also made possible marked advances in our knowledge of fat metabolism. Both these tests have lately been installed in the Battle Creek Sanitarium and have been found of especial value in cases of diabetes.

THE BEEBE LABORATORIES

Dr. Beebe was almost a pioneer in public laboratory work, and he is now recognized as a leader in this line. He has never departed a hair's breadth from ethical methods, which means that no exaggeration gets into his literature, and no pains are ever spared in his scientific examination of specimens sent to his laboratories.

Too high praise cannot be given this kind of work, and the physician who does not know of the helpfulness of such a laboratory, if he has none of his own, is not doing his duty toward either his patient or himself. To all such men we highly commend Dr. Beebe's Laboratories, of St. Paul.

PHYSICIANS' COLLECTIONS

The Mercantile Collection Agency, Inc., of Minneapolis, Seattle (Wash.), and Portland (Ore.), is handling physicians' accounts with unusual success, and their work and methods have received cordial endorsement by the physicians of both Portland and Seattle. They have offices in the New York Life Building, Minneapolis, and they invite personal interviews or correspondence with physicians who desire the service and protection of experienced and special collectors thoroughly familiar with this particular line of work.

We believe they will be found helpful and their methods entirely satisfactory in obtaining money due physicians without offending patients worth holding.

SOMETHING NEW—CHLORAZENE SURGICAL POWDER

A valuable addition to the list of antiseptics is a new Chlorazene preparation, just placed upon the market by The Abbott Laboratories, Chlorazene Surgical Powder. It contains 1 per cent of Chlorazene in a base of zinc stearate and sodium stearate. It is a fine, impalpable powder, free from grit and irritant substances, and powerfully antiseptic.

Chlorazene Surgical Powder may be dusted freely over denuded or abraded areas, cuts, wounds, and skin eruptions, and used as an antiseptic dusting powder of general utility following surgical operations. It relieves itching and subdues infection. It is applied, with happy results, to the sensitive skins of young children.

This antiseptic powder promises to be another big success,—a worthy associate of Chlorazene Tablets, Powder, and Chlorazene Surgical Cream.

FARMERS AND MECHANICS SAVINGS BANK

A savings bank is in no sense a rival of a commercial bank or of mortgage investments; nor are the latter substitutes for a savings bank.

We think of such an institution as the Farmers and Mechanics Savings Bank as a place of absolute security, of interment for money that so easily slips out of one's hands in small amounts, and as a personal friend of the young who so much need to form habits of saving and thrift, which always go hand in hand.

When a bank possesses these qualities, and pays 4 per cent interest, compounded quarterly, as does the F. & M. Savings Bank, and is also conducted by men admired and trusted by the public for their established character—when you find such an institution it is well to tie to it, to have an account in it, and to advise all young people to do likewise.

THE RADIUM INSTITUTE OF CHICAGO

The above-named Institute is conducted by medical men of high standing in Chicago and of recognized ability in the use of radium. There is no humbug about their work, and no exaggeration in their claims.

Radium is so useful in the treatment of some malignant and many benign growths that it is a pity to know that its usefulness has been endangered by quacks.

Radium is too expensive to be found in the smaller medical centers, and so patients must go to the larger centers for treatment.

The Chicago Institute, 1604 Mallers Building, Chicago, under the direction of Dr. Frank E. Simpson, is, we believe, worthy the utmost confidence.

PARAGON X-RAY PLATES

If an x-ray is worth taking, it is worth taking right; and, if it is not so taken, its interpretation is quite impossible. Much of the dissatisfaction with radiograms is due entirely to poor plates, just as much of the amateur and professional photography is due to the same cause.

Paragon plates, used according to the simple directions given by the makers of the same, have done very much to popularize x-ray work, and, indeed, to make it possible for the general practitioner to obtain the best of results even with a portable coil.

Messrs. Geo. W. Brady & Co., of Chicago, the makers of Paragon plates, publish for free circulation among physicians "The X-Ray Bulletin," and they want to send it to every man interested in the subject.

Messrs. Noyes Bros. & Cutler are distributors of these plates.

WHOLE WHEAT AND GRAHAM FLOUR

The ClarX Milling Company, of Minneapolis, manufactures a new process whole wheat flour that cannot be too highly commended; and we are glad to know that its sale from the first has been largely due to physicians who have recognized its value and highly recommended it.

Dr. Wiley says "it is a crime" to feed children white flour products; and, of course, he says so because practically all the mineral substance and all of the germs of wheat are taken out of the patent flour. Every physician knows this, but few physicians give the matter serious thought, and so go on, failing to notify their patients how vital the matter is.

This Company puts its product up in cartons and small sacks, and has adopted the trade-name "ClarX" to identify their product. Samples will be sent free to physicians requesting them; and every physician in the Northwest should know of the purity and excellence of this brand of whole wheat and graham flour.

ATOPHAN NOW AGAIN AVAILABLE—MADE IN THE U. S. A.

Closely following upon the announcement of Schering & Glatz, Inc., that they are now manufacturing and distributing exclusively genuine Anusol Suppositories and Probilin Pills, manufactured by them in the U. S. A., comes the even more important and welcome news that

Atophan is now also available, being manufactured in this country on a sufficiently large scale to meet the entire demand.

Physicians are advised that in case they are unable to have their prescriptions for Atophan promptly filled through the retail drug trade, they can obtain this product direct from Schering & Glatz, Inc., 150 Maiden Lane, New York.

This firm will also appreciate information concerning any attempt made to charge exorbitant prices for Atophan on account of alleged scarcity, which, barring unforeseen circumstances, need not be feared in the future.

POTASSIUM IODIDE AND HEXAMETHYLENAMINE TETRAIODIDE

Potassium iodide sometimes causes some very disagreeable effects, such as distressing gastric irritation, nausea, and even vomiting. As it must be given in solution, its administration is beset with many inconveniences to the patient, all of which leads to a disinclination to continue medication, even though the importance and necessity of such treatment are well recognized.

These disagreeable features are in a large measure avoided when iodine medication is obtained through the agency of Siomine (hexamethylenamine tetraiodide), an insoluble iodine product containing 78.5 per cent of iodine.

Siomine is well borne, is prompt and efficient in action, and is administered easily and in accurate dosage because of unvarying composition and its exhibition in capsule, thus eliminating entirely the unpleasant and nauseating taste of potassium iodide.

Siomine is decomposed in the alimentary tract with the formation of hexamethylenamine and iodine. Ordinarily the hexamethylene contents of Siomine is inert.

During the past two or three years Siomine has been subjected to a careful and thorough clinical trial, as to its therapeutic value as an iodine product. Many of the observers of Siomine have been very laudatory in their comments as to the efficacy of this agent in the pathologic conditions requiring iodide. Some have been less enthusiastic, but one and all are agreed that Siomine is at least the equal of potassium iodide in therapeutic action and physiologic effect, and vastly superior in that the dosage can be determined accurately and controlled easily, and that Siomine does not produce any untoward effects when administered properly.



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THE JOURNAL-~~L~~ANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, OCTOBER 1, 1917

No. 19

INTRAPERITONEAL EMERGENCIES*

BY R. L. MURDY, M. D.

ABERDEEN, SOUTH DAKOTA

My subject, on the face of it, covers a very large field, but it is not my purpose to attempt a discussion of the subject in its entirety; for this would be quite impossible when we reflect that several volumes have been written on it, and then covered only a single part of it. However, it is my object to view, in perspective, the situation which confronts the clinician and the operator every time one of these prospective emergencies presents itself for solution.

If I were called upon to define intraperitoneal emergency, I would say it is an acute intraperitoneal condition which, if not recognized and treated early proceeds rapidly toward serious illness or death. Emergency as comprehended in this paper, anticipates correct and speedy diagnosis, to be followed by early, efficient, and skillful treatment. It exists in a class of cases in which the time element is of great importance. They show a mortality in an increased ratio to the time elapsed from the onset of symptoms to the institution of treatment.

First of all, we must decide whether an emergency really exists. Assuming that we have fairly determined that an emergency does exist, then from what part of the great or the lesser peritoneal cavity does it spring? and what are the local conditions? After deciding such elementary questions as to the region, the pre-existing pathology, and the conditions which will naturally and logically lead up to a given climax, as a corollary and sequence, the art and science of

diagnosis may still be heavily taxed. As curative procedures and life itself largely depend upon the soundness of this judgment, its importance cannot be overstated.

For the solution of the questions raised by this perspective view, such as the region of origin, the organ involved, the pre-existing conditions, the point of attack, etc., one must have a working knowledge of anatomy and physiology, also an intimate knowledge of pathology. Further skill in diagnosis and experience as an operator are essential if these patients are to be saved.

Our perspective brings under consideration at once such conditions as ruptured duodenal and gastric ulcer, ruptured typhoid ulcers, ruptured or gangrenous gall-bladder, mesenteric embolism, gangrenous appendicitis, intestinal obstruction, ruptured pyosalpinx, ruptured intra-uterine and extra-uterine pregnancy, traumatism of all kinds in which viscera are ruptured or perforated, and others.

The foremost and most pressing need of the occasion is true light on the pre-existing pathology, if such existed, and present local and general conditions. Our best guide is an intelligent patient, the anamnesis. So important is the history-taking that, in many of these conditions, a careful and painstaking history, logically interpreted, ranks first in all the methods of diagnosis. A few things must be clearly and definitely established by the history, to avoid error in diagnosis and to secure the selection of early and appropriate treatment for each case.

*Read at the 36th annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

Among the prerequisites are the onset of the malady, the time that it has existed, the previous pathological and general condition. For instance, in the first few hours of a ruptured duodenal or gastric ulcer of the acute variety the condition will be largely local and regional, and will be characterized by a very definite set of symptoms; while, later or hours after rupture, the symptoms may be wholly general, and no physical sign will indicate definitely the organ primarily at fault, and, in the absence of a proper history, it might lead to a misplaced incision, or one very inappropriate for dealing with the offending organ.

It is not enough to know that there is a generalized peritonitis; we must know the region primarily involved, and the organ at fault, so that logical and skillful treatment may be instituted at the earliest possible moment. We must, for instance, avoid the futility of a midline incision in general peritonitis from a gangrenous appendix, or an upper abdominal incision in extra-uterine pregnancy, or tubal rupture.

In addition to the history, we have all the approved and classical methods of diagnosis at our command, but the nature of the case and good judgment forbid us to select methods which require much time for their elaboration. Laboratory and other cumbersome methods are, therefore, rendered quite useless. Perhaps in no place in the art of healing is the sense of touch so valuable as in the interpretation of intraperitoneal emergencies. If the trained mind, assisted by the history, suggests the region or organ involved, the skilled hand will interpret present peritoneal and general conditions sufficiently accurately to guide us safely in selecting a proper surgical procedure.

As time will not permit me, in a paper of this character, to discuss all the signs and symptoms in each specific condition, or to give more than a mere hint as to the treatment and surgical procedure best adopted for each, I will try to generalize as much as possible as to diagnosis and treatment.

All of the cases comprehended in this group have some common symptoms with individual characteristics, as to region, onset, progress, local manifestations, etc.; and likewise they are amenable to certain common principles of treatment. Therefore, if I succeed in making this paper comprehensive and interesting, it will be due to a grouping of the two big factors in successful management,—namely, diagnosis and treatment.

What can be said of the symptoms which are common to the group above enumerated? There are five common to them all,—pain, local tenderness, disturbance of respiration, temperature, and pulse. Two are common to most of them,—peritonitis and muscular rigidity. Free gas in the peritoneal cavity is common to all cases of rupture and perforation of the gas-filled organs, such as the stomach and intestines. Shock and loss of blood, faintness, vomiting, etc., must also be duly considered.

The group of symptoms comprehended in this title are mostly forerunners of peritonitis; therefore, the classical symptoms of this condition must be clearly fixed in the mind of the diagnostician. However, that may not occur as orderly and regularly as a text-book description; and the origin of these variations must also be clearly visualized.

As pain is the most characteristic symptom of this group, it must be considered more in detail. It is manifest in the superlative degree in rupture of large duodenal and gastric ulcers, permitting of the escape of a large quantity of acid material into the peritoneal cavity, and, in a mild degree, in the less irritating condition.

Where the parietal peritoneum is anesthetic, it is possible to have quantities of pus in the peritoneal cavity without pain. This knowledge is helpful to a proper understanding of local tenderness and muscular rigidity in atypical cases.

Lennander, the Swedish surgeon, was the first to point out that the visceral peritoneum is not as sensitive as the parietal, but both are painful when inflamed. Dr. W. J. Mayo has often pointed out the condition and reported patients with anesthetic peritoneum; therefore, it is the exceptional case in which perforated organs and pus do not produce pain and muscular rigidity. Some of these conditions will give pain due to localized peritonitis, and adhesions of organs to organs, or organs to fixed parts.

The characteristic pain of obstruction, due to any mechanical or inflammatory condition, is so well known that it will be readily recognized, and differentiated from perforation.

Local tenderness is a symptom of great regularity and value. It is regular in all cases except anesthetic peritoneum, both septic and non-septic. It is of twofold value: first, as part of a general condition and regular to the symptomatology thereof; second, it may indicate the organ or region from which the infection proceeds.

Vomiting is quite constant and regular to the group; its violence and character may also be suggestive, and may indicate in a measure the stage of the disease and probable outcome of the case.

Shock must be considered in the light of its severity, as well as in its probable relation to loss of blood.

The next symptom of great regularity and value is muscular rigidity. Its absence does not rule out any particular one of the group, but its presence in a marked degree, even in the absence of other important symptoms, is a silent but eloquent plea for exploration and operation. It is likewise present in some of the non-septic conditions, such as blood in contact with the peritoneum, which occurs in extra-uterine pregnancy, etc. It is quite constant and characteristic, and may be present even in cases with little or no pain, such as occurs in anesthetic peritoneum.

Muscular rigidity, like pain, is manifest in the superlative degree in cases of ruptured gastric and duodenal ulcers with the escape of acid contents. If there is such a thing as a pathognomonic symptom, it is muscular rigidity in this condition. The most board-like rigidity that ever came under my observation was seen in cases of acute rupture. The pulse of peritonitis and where the peritoneum is severely irritated is of some value, and should be studied carefully. Physicians of the old school who studied the pulse more clearly than we do today, recognized a pulse that was characteristic of peritonitis.

There is not much to be said about the other symptoms but what might be said of many conditions; therefore, they are not characteristic, but their value lies in their regular grouping with more suggestive symptoms. Taken in connection with pain, vomiting, local tenderness, and muscular rigidity, in a given case, they make the chain and weight of evidence fairly complete.

When our available information does not indicate clearly the intraperitoneal condition under consideration, and an emergency is clearly established, then we are justified in making an exploratory incision for further diagnosis and treatment. However, enough facts, general and local, must be established so that the incision can be placed in the most accessible location that the intra-abdominal treatment may be executed with the greatest expediency compatible with good work, and with the least amount of trauma possible.

I have purposely omitted a discussion of gunshot wounds in this connection, as that is a subject best discussed by some surgeon who has had experience in the war zone. However, so far as I know, no new principles have been established in this class of cases, but we can reasonably expect some brilliant improvement in methods, something that will compare with Carel's method of treating open and infected wounds.

Treatment.—The treatment is always early exploration with the precaution above enumerated. A painstaking examination must be balanced against an equally painstaking history; together, they must be weighed and interpreted. The serious nature of these emergencies, and their rapidly fatal progress calls for quick action, cool judgment, accurate interpretation, and skillful treatment.

No man is fit to accept these cases for treatment unless he has had experience and acquired the skill necessary to deal with any emergency in the peritoneal cavity, for the soundness of this judgment and the skill and accuracy of the work, determine the life or the death of the patient.

While general principles can be followed, the treatment must conform to the requirements of individual cases and conditions. For instance, all upper abdominal conditions may be treated through a single incision if properly placed,—that is, gall-bladder, duodenum, strangulation, mesentery, etc.

All duodenal and stomach ulcers should be sutured and patched. All require drainage of the infected area, but few require lower abdominal drainage. Gastro-enterostomy would best not be added unless the operator is exceedingly skillful, and the patient is in a good condition. The gall-bladder should not be removed in whole in the presence of severe infection with dense and extensive adhesions. As a rule a midline incision is best for strangulation and obstruction, a right-rectus incision for gangrenous appendix, and a low midline for pelvic conditions. Strangulation and obstruction must be treated with reference to the stage and to the conditions which produce them, with superimposed changes in the gut clearly in mind. Cases seen soon after obstruction should be treated by early exploration at the most favorable site, and all obstruction relieved. Late operations treated on this basis will result in a high and unnecessary mortality that can be largely reduced by a two-stage operation, first of which should be an enterostomy, an entro-enterostomy, or intestinal exclusion, al-

ways under local anesthesia. This is the best life-saving procedure in intestinal surgery of the emergency type, and as such should receive the careful consideration of every surgeon engaged in this work.

The method of personal preference in these neglected cases with much distention, dilated intestines filled with fluid, is to pick up the most prominent presenting intestinal coil, and suture into it a glass connecting tube or one made for the purpose; allow it to pass out through the incision and close the wound down to the tube; put on a rubber tube and connect it with a bottle, and then allow the gas and liquid contents to escape. This is indicated in obstruction from abscess and all other forms of obstruction, unless it is strangulated hernia. At the end of twelve to fourteen hours the distention will be greatly reduced, gas will have escaped, and the liquid contents drained off; then the abdomen can be opened widely with the greatest of ease and with a minimum amount of shock, and the condition dealt with as found.

The advantages to be gained by this method are the following: the shock will be greatly lessened; the operation made much easier; the time shortened; the toxic liquid contents removed and absorption prevented from the collapsed bowel; the manipulation of distended bowel avoided; the hopeless cases made operable; and the mortality much reduced.

Many other conditions should be dealt with specifically, but my time will not permit this. However, I am going to hazard a suggestion or two about a few specific conditions,—namely, drainage and hemorrhage, and the removal of infected foci, such as a ruptured appendix and pus tubes.

Drainage, if indicated, should be ample and from dependent points. Too many questionable cases have been drained in the past, many of which would have been better off if drainage had not been instituted at all. So now my rule is, if in doubt, do not drain.

Hemorrhage, as in ruptured extra-uterine pregnancy, should not be trusted to a clot, but the earliest possible exploration should be made and the bleeding point secured, no matter how bad the condition of the patient. In desperate cases it may be done under local anesthesia.

When Dr. Knott brought out the theory of removal of infected foci, as in early ruptured appendix, he advanced the best single step which

has ever been adopted in the treatment of intra-peritoneal emergencies.

DISCUSSION

Dr. B. A. BOBB (Mitchell): When I received the program I saw I was on for discussion of this paper, and I waited for some time, and then wrote to Dr. Murdy a few days ago for some of the phases of the subject he expected to discuss, as I knew volumes had been written on this subject, and I did not know just which phase he intended to present. But he was busy and did not write, so I have the whole paper left open to discuss. As you know, men do not usually discuss the paper anyway. However, the doctor covered this very nicely and I want to thank him for his paper. I feel that I have learned something. I think that I never come to a meeting of the Association without learning something that benefits my patients as they come to me.

In the first place, if a patient comes to you suffering from an intra-abdominal lesion, the more he suffers the easier it is to make a diagnosis. If a patient is brought in with a cold sweat, a pallid face, a rapid pulse, say 140 to 160, a temperature below normal, if you find something has happened in his abdominal cavity—that is a strong indication for an exploratory incision, and at once. It does not mean that you should wait for observation—it should be done at once. However, it is the cases that come to you that are not so marked, that take skill in diagnosis to make up your mind what is best to do for the patient. We all meet these kinds of patients in whom there is some intraperitoneal lesion; it may be of a very serious nature, and one in which observation of the patient for a few hours—five or six, or twenty-four—would mean the death of the patient. While I do not want to bring the history of my patients before you I do not know of any better way to discuss this paper than to present some cases that would require skill in diagnosis.

So I will present to you a case in which there was an intraperitoneal lesion, as I thought. The case was referred to me. A young man, twenty-seven years of age, went to a dance about three weeks ago, feeling perfectly well, but when he got there he found he could not dance on account of pain in the abdominal cavity. He began to have abdominal distention, and after a while he was taken home, and he came to the hospital within the next thirty-six hours. His abdomen was as rigid as a board, and he had been vomiting acid content of the stomach. His temperature was 100°; pulse, 130. The picture was abdominal distention, rigidity, pain, and vomiting, and, on palpation, fluid in the abdominal cavity.

What was the lesion? The pain was general, not more in the epigastric region than any place else. The boy was willing to submit to an exploratory incision at once, which was made and a quart of yellowish fluid poured out. We carefully examined the stomach and gall-bladder, the incision running from above the umbilicus to the pubes, but nothing was found except the fluid. There were no perforations, although the intestines were red and inflamed. The question is, was there a small perforation somewhere that we did not find? Of course we could not examine the fluid then, but afterwards it showed it was filled with leucocytes. But the fluid was gotten rid of, drainage established,

and the boy got well. Nothing was ever found except that perhaps it was a tubercular peritonitis. But why should it come on so suddenly? We do not know. The boy was perfectly well before. Tubercular peritonitis usually comes on slowly. I have one case now that has been coming on for a month.

Another case was a boy who was brought in seven days ago, twenty-four years of age, married, perfectly well. He came in from the field at five o'clock, went into the house and took a little drink of whiskey, then went out and accidentally hit himself in the epigastric region with a hammer, which knocked him unconscious for three hours. The doctor who made the examination found him in terrible pain in his stomach and in the esophagus at the junction of the collar bone and sternum. When the boy was brought to the hospital he refused operation, and we had to give him hypodermics for the pain. He vomited blood several times during the first thirty-six hours, and pain was very severe, both in the esophagus and epigastric zone, whenever he was allowed to come out of the influence of the morphine. He vomited a pint of blood in two different vomitings. What was the lesion? He would not submit to an exploratory operation, so after waiting thirty-six hours when there was no abdominal distention and no rigidity to speak of he submitted to the operation because we did not give him any more hypodermics. We examined the stomach and found a slight perforation on the posterior wall at the small cardiac end of the stomach. The stomach was as thick as leather all through. The indications were that the boy had swallowed some corrosive substance, but so far as we could find out he positively had not. We brought in his relatives, and they say not. Dr. Young, who first saw him, says not, but still there has been no way of making any diagnosis except that there was a small perforation; but what made all that pain and caused the thick condition of the stomach? I do not know.

These are the difficult cases in which early diagnosis means so much. How much better off the boy would have been had we gotten in right away.

Later developments show this case to have almost a complete stricture of the esophagus.

DR. T. F. RIGGS (Pierre): There are two points in connection with Dr. Murdy's paper that I would like to discuss. First, as to the investigation of the history of the patient. The history is one of the main points in the diagnosis, but I would suggest that we do not ask suggestive questions. I think that most of us are guilty. We suspect something that we want to bring out, and we start to ask suggestive questions.

The second point is the enterostomy in cases of peritonitis in which there is danger of ileus.

Dr. Murdy spoke of a glass tube. I never used a glass tube, but have found a most satisfactory method in the use of a No. 10 catheter sutured with two mattress sutures passed in opposite directions. Puncture the bowel in the space between the sutures, pass the No. 10 catheter, draw up the sutures, and you will have no trouble. You are sure of drainage, and you are sure of short-circuiting that bowel by at least eight or ten feet, and your patient is relieved. That can be done under local anesthesia in severe cases, and will give you opportunity for later more extensive operation.

DR. MURDY (closing): In conclusion I wish to cite the essential feature in a few patients who were kind enough to come under my observation while writing the paper. There were two men with perforated duodenal ulcers, also two women, one with a ruptured pyosalpinx and one with a bleeding duodenal ulcer. The men were thirty-two and thirty-five years old, respectively.

The symptoms in each dated back about ten years. Both men presented histories in which the leading symptom was chronic digestive disturbance mostly periodical, but when present was continuous for several weeks at a time. From this stage on the history of one is essentially the history of the other. Therefore I will write the history of patient No. 1 to emphasize some of the points of the paper.

He developed sudden, severe intra-abdominal symptoms characterized by pain of a severe character, extreme muscular rigidity, and a hard, thready pulse. Exploration, nine hours after the onset of symptoms, revealed a perforated duodenal ulcer with a large quantity of thin milky fluid in the peritoneal cavity, and an intense redness of all the peritoneal surfaces.

Man No. 2 came in and was explored sixteen hours after the onset of symptoms, which differed from No. 1 only in the amount and quality of fluid contained in the peritoneal cavity; also it had settled well into the lower abdomen and pelvis, therefore pelvic drainage was instituted, as well as through the operation wound. Both cases were subjected to infolding of the ulcer and suture. No other operation further than No. 2 was drained as above. No. 1 had drainage through operation wound only. Both made uneventful recoveries.

Woman No. 1, married, forty-four years of age, had a single pregnancy and confinement sixteen years before; also a difficult instrumental delivery, followed by an intense infection, from which she slowly recovered and regained her health in about two years. There was no history of sickness or inflammation from this date until she was seized with her present illness, which followed reaching in cleaning overhead.

Pain was followed by general peritonitis due to rupture of an old pyosalpinx, as revealed by exploration on the second day of the illness. The pus tube was presumably of sixteen years' standing.

Woman No. 2, thirty years of age, single, nutrition and strength good up until present trouble. She gave an indefinite history of digestive disturbance, slight food ease to be followed by slight pain.

She had tarry stools for the last month or more, positive for blood, followed by several large hemorrhages. Much blood was vomited, and blood passed by stool.

Hemorrhage continued in spite of ordinary methods. The blood-count gave less than a million reds, and the hemoglobin was below 20. The desperate condition of the patient demanded desperate treatment; therefore the patient was operated on under ether. A gastroduodenal ulcer was found, resected, and sutured. Hemorrhage ceased, but the patient failed to come back as desired. The second day following operation, 600 c.c. of her sister's citrated blood was transfused. Slight reaction followed the transfusion, but from this time on recovery was uninterrupted. The blood-picture and the patient improved steadily.

TONSILLECTOMY: SOME INDICATIONS FOR, AND SOME OBSERVATIONS ON, THE OPERATION*

BY ROBERT A. CAMPBELL, M. D.
MINNEAPOLIS

Attacks of acute tonsillitis may bring on complications in almost any part of the body,—in joints, heart, ear, eye, appendix, kidney, liver, lungs, etc. They may lead to chorea, thyroid hypertrophy, cervical adenitis, chronic toxemia, etc.

In a recent case of lymphatic leukemia at Abbott Hospital which had its onset after an attack of tonsillitis, tonsillectomy was considered, but was not done because of the grave condition of the child at the time.

In quinsy, or peritonsillar abscess, the existing pocket between the tonsil and the muscular bed is best destroyed by removal of the tonsil.

Enlarged tonsils cause more or less obstruction to breathing. An American boy, seven years of age, came to Minneapolis from Japan. A Yokohama surgeon had removed his adenoids thoroughly, but not his tonsils, which were large and embedded, being nearly covered by palate and pillars. The obstruction to breathing, which was not removed by adenectomy, disappeared upon removal of his tonsils.

Recurring attacks of la grippe are frequently due to tonsillar infection, although the tonsil itself may show little indication for removal. A young man had a tonsillectomy done in the fall of 1915, with the object of breaking up attacks of la grippe, which he had had the previous winter; and the following winter he escaped la grippe infection.

The same bacteria have been found in the crypts of tonsils and acute arthritis. In cases of chronic arthritis injections of a strain of the streptococcus taken from the crypts of the tonsil produced arthritis in animals. Goldthwaite, of Boston, while in St. Paul a few years ago, advised a tonsillectomy in a patient with early arthritis deformans, although the tonsils were very small and had only occasionally a little cryptal débris.

Tonsils having tubercular foci responsible for tubercular glands may show no indication on their surface, but should be removed. One indication for tonsillectomy is no more than a fetid odor given to the breath by the offensive cryptal plugs of cheesy material. In this condition some

degree of success may be obtained by temporary treatment consisting of cleansing the crypts and applying iodine solutions in strengths up to 18 per cent to their interior surfaces.

Aids to examination of the tonsils are had in the drawing forward of the pillars with a hook, or the application of pressure in front of the tonsil to make the crypts gape.

In the absence of suggestive appearances, indications for tonsillectomy may be arrived at by eliminating other possible foci of infection. The reward of operation is sometimes immediate improvement of the patient, but it is more often a slow regaining of health.

It is frequently surprising to find at operation an old chronic abscess behind a tonsil, or deep crypts with fish-egg-like retention, or crypts under the plica that are plugged with débris.

The order of frequency of location of foci of infection in the body is probably as follows: tonsils, teeth, sinuses, gastro-intestinal tract, other locations.

We may find in years to come satisfactory substitute procedures for tonsillectomy; at present there are none, and all the older incomplete methods are now abandoned. In the future a development of Murphy's idea of conservative operation possibly may prevail. Circumcision with removal of the plica and establishment of adequate drainage to each crypt would meet the indications in many cases, but as practiced now it seems inadequate. Incomplete removal is followed, usually, by further trouble.

A good tonsillectomy consists in the removal of all faucial tonsillar tissue. Several years ago for a time I intentionally left a little tonsillar tissue in the center of the fossa; the results were disappointing in about 20 per cent of the cases, and the practice was abandoned. For a year or two several years ago I left as much as possible of the plicas in position to cover the denuded areas. In a small percentage of these cases slight attacks of inflammation recurred at intervals in the plica; this practice was abandoned. The plica is a folded layer and often contains more or less lymphoid tissue within its fold. The plica is composed of four layers: first and superficially is a mucous layer; secondly, a fibrous layer; thirdly, a fibrous layer; and, fourthly, a

*Presented before the Aberdeen District Medical Society at Aberdeen, S. D., January 30, 1917.

mucous layer. Lymphoid tissue with tiny crypts is often developed in the third layer, and this lymphoid tissue is in many cases continuous with the tonsil tissue. All of the plica except the outer mucous layer should always be removed with the tonsil.

Tonsillectomy, unfortunately, long considered a minor operation, has not been standardized; with the old tonsillotomes of McKenzie and Mathieu more or less of the palatoglossus and palatopharyngeus muscles usually disappeared in the surgical spasm. These two muscles are conserved today, but the superior constrictor muscle, which forms the tonsillar bed between the two pillars, is the one that needs more consideration than it gets. It is injured in many adults' throats. In adults it is more or less difficult to strip the tonsil off without taking some of the superior constrictor fibers; in children the reverse is perhaps true.

Coursing through and on the surface of the superior constrictor muscle are the arteries that supply the tonsil; below is the tonsillar branch of the lingual, which is a hard and persistent bleeder; above and between the pillars is the descending branch of the ascending pharyngeal, which often spouts like a hose when cut. These two often require ligation in adults to insure safety. The tonsillar artery enters about the center of the tonsillar fossa and, in my experience, is seldom a serious bleeder. Small arteries, if cut in the muscles, often bleed rather persistently and are difficult to grasp with artery forceps. After sponging the tissue clean, a drop of Monsel's solution will contract them.

In ordinary cases in adults, pinching the arteries with hemostatic forceps for fifteen to sixty seconds should be a routine practice. It is a source of great comfort to know that all hemorrhage has stopped in the tonsillar fossa before leaving it. The few tonsillar hemorrhages which I have been called to see two, three, or four hours after operation, have mostly been due to failure to stop all bleeding completely at the time of operation. We must not delude ourselves with the idea that we have a general seepage from the muscles, for it is almost invariably an artery that is bleeding, an artery that can be grasped and tied at once in most cases. In those cases where it seems impracticable to place a suture, all clots

should be swabbed off the surface of the tonsillar fossa, and a hemostatic agent applied gently and firmly at the location of the hemorrhage. If Monsel's solution is used, a small amount brushed quickly over the area is sufficient. The swab should not be held against the tissues, the object being to place the solution at the mouth of the artery and on the adjacent tissues so that the tissues will contract around the mouth of the artery.

To all familiar with the operation of tonsillectomy it is apparent that clamping the pillars together or sewing them or using pressure for a long time, is not a satisfactory surgical method of controlling hemorrhage, but it may have to be resorted to in exceptional cases under unusual conditions.

It is at the time of hemorrhage that one sees the enormous advantages of having the patient in the side position with the bleeding side uppermost. Familiarity with operating on patients in this position is a great help. The tongue on that side can be depressed, the anterior pillar lifted with a grasping forceps or retractor, the posterior pillar in low hemorrhage grasped with a forceps and pulled backward, and the whole tonsillar fossa after being freed from blood clots brought into plain view for hemostatic procedures. As long as tonsillectomies are done in adults, injuries to the superior constrictor muscles and consequent hemorrhages will occasionally occur.

The side position, it seems to me, is to be highly commended for other reasons also. The thighs and legs are flexed as in the sitting posture; the trunk and head are in the same relative position as while sitting; the head is tipped backward, the side of the head resting on a sand-bag and the operator sitting with his head on a level with the patient. This position when properly used gives relaxation to the throat muscles so that, when the tonsil is grasped, it can be moved in any direction.

With the tonsil under operation uppermost, the side position offers the greatest advantages for the study requisite to the acquirement of skill in the operation,—skill that leads to the ideal tonsillectomy,—a removal of all the faucial tonsillar tissue, no injury to the muscular bed, and a minimum of hemorrhage.

SYPHILITIC PSEUDOPARALYSIS (PARROT'S DISEASE)*

By THEODORE F. RIGGS, M. D.

PIERRE, SOUTH DAKOTA

Syphilis we have always with us. With its initial and secondary lesions we are familiar. Its more remote manifestations may escape our diagnosis because of the multiplicity of forms in which the disease may appear.

The particular manifestation of syphilis which I wish to bring to your attention is the pseudoparalysis of infants. It is also known as Parrot's disease, because it was Dr. Parrot who, in 1872, demonstrated the relation between the loss of motor power and bony lesions of the extremities, which he described as epiphyseal dislocations due to hereditary syphilis.

That the specific lesion is not always a dislocation of the epiphysis, but perhaps more often a periostitis, seems borne out in the reports obtainable and in the two cases which I now briefly outline.

CASE 1.—On April 6, 1913, I was called to see K. N., a baby, seven weeks old, because the mother thought she had injured the baby's arm in lifting him.

Family history: Parents apparently healthy and without history of any serious illness.

Personal history: Spontaneous labor, first child, weight $7\frac{1}{4}$ lb.; no record of examination of placenta.

Personal history: Health up to April 3, normal; but on this day the mother noticed that the baby cried when she moved its left arm and that it seemed to have a little fever.

Physical Examination: A well-formed, well-nourished child. Temperature 100.2° . Left arm flaccid; voluntary motions of right arm and of legs noted. Passive motion of left arm not limited, but evidently caused pain. There was a slight cyanotic spindle-shaped swelling in the region of the lower half of the left humerus, and a primary diagnosis of accidental injury or bruise was made. Two days later, however, the right arm became involved in a similar manner, and this led to a proper diagnosis. At no time were the legs affected, although their movements were less active than usual probably because transmitted motion to the arms gave pain. A thorough examination failed to show any other evidences of disease except that the fontanelles seemed to be more nearly closed than is normal at this age. Ten days after the first evidence of trouble the child had an atypical attack of "snuffles" that lasted only one week. Sixteen days later all the finger-nails and the nails of the two great toes became cloudy and slightly dark in color, and soon dropped off, being gradually replaced by normal nails.

Mercurial treatment (protiodide, .01 gm. three times a day) was begun as soon as diagnosis was made; and the child showed prompt improvement within ten days, having fully recovered the use of his arms. At

the end of the year no evidence of the previous illness could be found, the weight and growth being up to normal.

A further study of the family history, carried out after diagnosis had been established in the child, proved most interesting, thanks to the co-operation of both parents. The father and his parents are negative, it being impossible to find anything justifying the least suspicion. The mother's own life is without history of any manifestations of syphilis, but her father contracted syphilis supposedly previous to his marriage, and her mother is known to have had the disease and to have died from its effects. Their only child, the mother of this patient, was taken shortly after birth, and brought up by her grandmother. It is impossible to state that she did or did not have parental syphilis, but she has never exhibited any symptoms of the disease since the grandmother undertook her care. The Wassermann test, however, is positive.

CASE 2.—On August 6, 1916, I was called to see F., child eight weeks old, the parents fearing that it was a case of infantile paralysis.

Family history: Both parents are apparently healthy. One previous full-term pregnancy with still-born, normal-appearing child.

Personal history: Full term normal labor—active child with excellent disposition and normal growth.

Present illness: Onset two days previous to my being called. The child was first fretful and restless; the following day the parents noticed that it did not move its arms and that it cried out whenever it was moved.

Physical examination: A well-formed, unusually plump child. Color, good; temperature 100.6° . One circular dry scaly patch noted on its forehead about .5 cm. in diameter, and on the right cheek a smaller patch that looked like a water-blister or bleb. The child was resting flat on its back, its arms lying flaccid at its sides. Voluntary motion of the legs noticed, but not of the arms. Any passive movement of the arms or any movement of the body which moved the arms evidently caused acute pain. Examination of the arms showed an apparent thickening in the region of the lower end of each humerus. Joints not involved. Legs, negative.

In view of the fact that this child was seen during the epidemic of anterior poliomyelitis in 1916, and because of the rather suggestive history of the onset and the clinical picture, it was not unnatural to consider infantile paralysis as a possibility. However, the presence of the two peculiar circular blisters, a history in the father of a similar bulla three years before, and the history of the still-born child, led to the correct diagnosis of a luetic infection. The child was put on protiodide of mercury .01 gm. three times a day, and within five days it had recovered the use of its arms.

The succeeding events in chronological order are interesting. Wassermann on the mother, negative. Test of the father was refused. Five weeks later the mother came in complaining of dimness of vision, and atypical luetic retinitis developed, clearing completely under forced specific treatment.

*Read at the 36th annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

At about this time because the child was apparently well the parents became careless in continuing its medicine, in spite of repeated warnings; and in January the baby suddenly developed a very extensive general purpuric rash with swelling of the arms and legs and typical "snuffles." These manifestations promptly disappeared when the treatment was resumed, and up to date the child has had no further trouble.

It may not be out of place here to repeat the point so often made by J. Whitridge Williams and only recently again impressed upon us by J. Morris Slemmons in regard to the routine microscopic examination of teased portions of the placenta in every case. While perhaps not absolutely diagnostic, yet the finding of peculiarly clubbed and blunted placental villi is more than suggestive; and in the case of the child just reported, its still-born predecessor, and the first case reported, I do not question but that the probable diagnosis might have been made.

Royster defines pseudoparalysis in infants, or Parrot's disease, as "a manifestation of inherited syphilis, which exhibits itself in the first few months of life in a failure, disinclination, or inability to move one or all of the extremities."

The first symptom that is noted is that the child does not move one or all of its extremities. The arms are, according to case-reports, most often affected, the legs alone may be affected, or all extremities. "In case one or both arms are affected the child will lie with them rotated so far inward that the palms face outward. These cases resemble, and are in appearance identical with, brachial birth paralysis," and, as Osler points out, must be differentiated from infantile scurvy, or Barlow's disease.

"There are various gross appearances dependent on the stage or degree of cartilaginous inflammation. Thus there may be a ring or collar apparent on palpation, partly or wholly surrounding the bone at the junction of the epiphysis with the shaft (usually upper) due to proliferation of the cells, or there may be a distinct separation at the same point due to absorption of the cartilage with accompanying free motion at the false joint thus formed. Or, again, there may be complete breaking down of the tissue with pus-formation, finally rupturing through the skin forming an open abscess." In cases of abscess there is secondary infection.

The x-ray in Parrot's disease shows "recognizable changes in the osseous system, which consist in lessening of the diaphyseal shadow, or in periosteal hyperostosis, or in swelling of the bone. In genuine separation of the epiphysis there is

shown a periosteal inflammatory line deposit at the diaphyseal border which extends over to the epiphysis and may produce a very irregular shadow effect of the latter."

According to Veeder and Jeans, "necropsy as well as röntgenograms show an epiphyseal lesion to be very common in hereditary syphilis. It is only when the epiphysitis extends to and involves the periosteum and muscles that a lesion which is recognizable clinically is produced."

The pseudoparalysis is often the first symptom noted in congenital syphilis; in the fourteen cases reported by Veeder and Jeans the earliest appearance of the symptoms was at the age of two weeks, but in two cases symptoms did not develop until the third month. When other symptoms of syphilis are present, or when there is a clear history of syphilis in the parents, a correct diagnosis can usually be made without difficulty. In other cases, however, diagnosis is difficult, especially as the Wassermann reaction is often untrustworthy in early infancy. Few cases are reported, and it is probable that many have been overlooked or wrongly diagnosed. Veeder and Jeans found only 14 cases of Parrot's disease in 100 cases of infantile congenital syphilis.

The only treatment is specific; both mercury and salvarsan are used with syphilitic infants. Some authorities suggest local applications of mercurial ointment in conjunction with general antisyphilitic treatment.

In the matter of diagnosis of syphilis in early infancy, as might be expected, the late Sir Jonathan Hutchinson has left us a most concise statement, and I cannot but quote him on this subject:

In many cases the recognition of inherited syphilis at the age of six weeks or two months is exceedingly easy. The stuffed and expanded nose, the snuffles, the pallor, the patches of peeling erythema about the face, neck and nates, constitute a picture which can scarcely be mistaken, but which is often yet heightened by such symptoms as sores at the angles of the mouth and anus, a peculiar odour, and periosteal tenderness of various bones. In many cases, however, one or several of these symptoms may be omitted or ill-marked, and in some they are all of them absent. In certain cases, therefore, it is to be admitted that the diagnosis may become very difficult or even impossible. In such cases help must be sought from the parents' history, and from facts, if there are any, as to previous births. In doubtful cases each one of the symptoms must be scrutinised with suspicion. Infants who are not syphilitic often have a certain kind of snuffles, and common eczema of the nates may assume exactly the same tint as that which is specific. Sores in connection with diarrhea may occur at the anus, which may be mistaken for condylomata. It is seldom safe to trust to any one

symptom unless it is very well characterized. A typical condyloma is conclusive, and so also are certain types of skin eruption and certain forms of bone disease. For a knowledge of the condition of periostitis which denote syphilis in the infant, we are indebted to very recent observations. When M. Diday, in 1856, wrote his work on this disease, he stated that the records of medicine composed scarcely any instances of bone disease in connection with inherited taint.

Hutchinson, however, in 1863, recognized the frequency of nodes and periostitis as evidences of syphilis in children. It was reserved for Dr. Taylor, of New York, Dr. Wegner, of Berlin, and Professor Parrot, of Paris, to show that bone lesions are really very frequent in the early periods. They had been overlooked because they are usually, like the other phenomena of this stage, transitory, and because they but rarely led to suppuration. The careful re-investigation, in this country, by Drs. Barlow and Lees, of the facts expounded by Parrot, have confirmed the correctness of these in the main, whilst they have corrected certain errors of inference. The chief difficulty consists in the similarity which some of the infantile bone lesions of syphilis present to those of rickets. As a rule, however, the syphilitic lesions occur at an earlier age, are attended by more definite signs of inflammation, and are not accompanied by the other phenomena of rickets, such as profuse sweating of the head and buttons on the costal cartilages. Congenital syphilis and rickets very often co-exist; but there is no reason for believing that the one is in any sense the cause of the other. For purposes of diagnosis of syphilis it may be sufficient to state that in infants suffering from it it is very common to find certain areas in the skull tender and slightly swollen and that the regions of the

epiphyses of long bones often suffer in a like manner. These lesions are often multiple and may make all movements of the limbs so painful that paralysis may be suspected. Careful examination will always detect tender swellings of the periosteum near to the junction of the epiphyses and sometimes on the shafts. These swellings are often of considerable size, much larger and at the same time more inflamed than those of rickets. Suppuration is not common, but it does occasionally occur. If this form of multiple periostitis is seen within six months of birth it is almost certainly due to syphilis.

DISCUSSION

DR. B. A. BOBB (Mitchell): If I understood the doctor correctly he believes every placenta should be examined microscopically. That would be hard for a country doctor to do, although I presume it could be done.

DR. RIGGS (closing): I know it would be quite a task to examine every case, but perhaps it seems more of a task as you think of it than it would be to do it. All it requires is a small portion of the placenta under a cover-slip in water, and just a glance will show you the typical clubbed villi. It is a most remarkable picture, and, if you have not seen it, it is worth seeing. The normal villi are very slender, thin, pointed bodies, whereas the suspicious syphilitic villi are clubbed. It only takes five minutes, and will amply repay you. I admit it seems somewhat of a task, but, on the other hand, you examine the placenta for any bits that may have been left in the uterus, and it does not take much longer to take that placenta home, and examine it microscopically. In the case that I reported of the still-born child there is no question but that diagnosis could have been made. Had this been done I believe the mother might have been taken care of so that she would not have had her eye trouble, and the second child would not have had its pseudoparalysis. I do not think it is such a dreadful task to examine the placenta microscopically.

SOME POINTS IN THE PREPARATION OF MATERIAL FOR LABORATORY EXAMINATION*

By MORTIMER HERZBERG, M. D.

Director of the State Health Laboratory

VERMILLION, SOUTH DAKOTA

In view of the difficulty the laboratory man has in getting material presented in such form as to enable him to express a satisfactory and reliable opinion, I thought it might be of interest to draw to your attention a few facts from the laboratory man's point of view with reference to the preparation of such material.

The great diversity of specimens makes a detailed statement impossible here. I am sure, however, that my personal experience through serving you the past few years indicates that a few general points may be of value.

There seems to be a prevalent idea that the laboratory man, be he chemist, bacteriologist, or pathologist, is possessed of clairvoyant powers. Be assured that, if he is honest, he is not so

*Read at the 36th annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

gifted. The bane of his life is to be asked, and expected, to do something beyond the power of man. Do not send him a macerated specimen in some indifferent fluid, and attach to it your prescription-blank with some such words as these: "Specimen from the late Honorable Silas Smith. What is it?" written in your choicest hieroglyphics. It is a reflection upon your intelligence to do so.

It is usually of importance to the pathologist in coming to a conclusion to know where and how the specimen was obtained. Tell him all you know about the case. Was it gotten at an operation? Or was it passed? Or did some one of your patients find it upon the door-step in the morning? The specimens submitted to a diagnostic laboratory come from various sources. I have seen presented for diagnosis a great choice of things, varying from a leather belt with insect eggs neatly deposited upon it, to water stained with wash-blue. Remember that a pathological diagnosis is like a bedside diagnosis; it is the result of summing together of a number of related observations. Remember the aphorism of Hippocrates: "Experience is fallacious, and judgment is difficult." Remember that, if the pathologist is as good a man in his line as you are in yours, on the mere law of chance he is as likely to be right as you are, even if he does not agree with you.

The value of the history of a specimen under consideration was brought out very clearly some time ago in our laboratory. Two samples of water from the same source were submitted for examination. One was to be examined chemically, the other bacteriologically. The specimens were examined independently. The chemist condemned the water as insanitary; the bacteriologist passed it. On the face of it the report would have looked amusing to a third party. The facts of the case, learned later, were these: The water was gotten from a well in a stratum of sand. On one side of the sand-bank was a dump for refuse. The water was filtered bacteria-free by the sand, but the ammonia and other chemical substances in solution readily gave evidence of the contamination by the refuse. The sand-bank could not, of course, be considered an absolute barrier against bacterial invasion. The water was rightly condemned.

While speaking of water, I wish to impress upon you that a single examination is relatively valueless without a sanitary survey, and also that repeated examinations of a water will not purify

it. I have a supply in mind which I believe has been condemned fourteen times out of about sixteen examinations. It still comes in occasionally. The people seem to think that sometime we may pass it, and that that will correct the difficulty. Typhoid bacilli are practically never found in water. A high count and the presence of organisms of the colon group are sufficient evidence of contamination to condemn a sample. Bacteriological examination of water is a delicate technic, and results are essentially worthless unless the minutest details have been rigidly observed in sampling. Any old bottle and cork which have been boiled or otherwise sterilized are not proper containers. The laboratory will supply proper outfits and instructions where necessary.

Aside from water, perhaps no class of specimens, as ordinarily presented, are so unsatisfactory as tissues. In size they range from a pin-head to a cocoanut. We get them soaked in salt solution, in fixatives of various kinds and origins, and dried crisp between bits of paper or cotton. In order that it may resemble the tissue during life, material of this kind should be properly fixed immediately after its removal from the body. It should not be dissected by the surgeon or his assistant, nor should it be jammed into a bottle so small as thoroughly to distort it, and which must be broken to get the specimen from its container. There should be four or five times as much fixative as specimen, not just enough to give an odor. As a general rule, formaldehyde, one part to nine parts of water, is a good fixative, is readily procured, and is cheap.

Special stains or examinations frequently require special fixative solutions. A full history of the case, giving the organ and giving a sketch showing the plane of the section, is desirable. It helps the pathologist to orient the specimen in the preparation of sections. A good history interests and stimulates the laboratory man, and he will make a problem, and not a mere examination, of your material. Please remember that an absolute differential diagnosis is not always possible between chronic inflammatory conditions and tumor-formation. Likewise, the question of innocence or malignancy cannot always be settled by the microscope.

Blood-counts must be made at the bedside. They cannot be made from dried droplets of blood or smears on glass. The latter, when properly made and air-dried, are valuable for differential leucocyte counts and general blood surveys.

Milk, urine, and gastric contents should be in

amounts permitting other than microchemical methods. Two to four ounces or more should be sent, together with a definite statement as to what is desired and a full history of the case. In the matter of urine, for example, a different interpretation may be placed upon the presence of pus cells, depending upon the sex of the patient, the age, and whether the specimen was obtained per catheter or not.

Specimens for cultural examination should be iced and not preserved with carbolic acid or other disinfectants.

Heads of animals for rabies should be well wrapped in towels or cloths moistened with formaldehyde, and not embedded in boxes of sawdust or straw, or floating in lard cans of ice water. These heads should be removed with precaution at the shoulder. The animals should not be killed by having the brains beat or shot out. The brains are needed in a good state of preservation for making the diagnosis.

For the Wassermann test a definite amount of blood is needed. This varies according to the technic employed. When fully controlled we require the amount of serum we can usually obtain from 5 c.c. of blood. A sterile bottle with a sterile rubber stopper answers the purpose of a carrier. The blood should not be taken until a number of hours after a meal. The use of alcohol or an anesthetic is likely to interfere with the test, so that the bleeding should not be done for several days after the use of either in any form. The blood should be permitted to clot thoroughly before being mailed.

These are a few considerations relative to the preparation of specimens which our experience has shown often to be necessary. The State Health Laboratory has gone into detail in its literature concerning some of these. Personal correspondence will attempt to supply further data whenever necessary.

These remarks are not intended to be caustic or critical. It is fully realized that the average practitioner does not attempt to keep himself any better informed on laboratory technic than does

the laboratory man upon the finer points of abdominal surgery. What is needed, is the appreciation of the value of properly prepared specimens, and a franker co-operation between the two for their mutual benefit.

DISCUSSION

DR. CARL F. RAVER (Aberdeen): I certainly enjoyed Dr. Herzberg's paper very much, because there is a great deal of truth in every word that it contains; and I want simply to emphasize what he said. I think about the best thing he could do with that paper would be to have it published in pamphlet form, and mail it to all the physicians in the state, and send them duplicate copies once a month.

The bane of the laboratory man is an improperly prepared specimen, and the general lack of knowledge concerning the way it should be sent in. With poor specimens one cannot do good work. You come into the laboratory, after being out to lunch, and you find a bottle of urine standing there that has the cork sealed, and the contents so thick you cannot see through it. Nearby is a prescription blank bearing the doctor's name with never a word saying where it came from; no record of any kind; no history; absolutely nothing to work on. If you are a good friend of the doctor and want to help him out—as we all want to do—you sit down and call up his office, and the office girl says the doctor is out in the country, and there is no way to reach him. Possibly, if you do get him, he says "I want to know if there is any pus in it." Why could he not have written that in the first place, and saved you the trouble?

The physician should consider the laboratory man in the light of a consultant. The laboratory man should know as much about the case as the physician in charge at the time of the examination, in order to eliminate the things that are unnecessary. You can examine urine for a great many things, and the same holds true of the blood; and you want to know exactly what the doctor wants, what is his viewpoint, and what condition the patient is in, and, if you do not have this, you are very much handicapped in your work. As Dr. Herzberg said, the laboratory man cannot do things without human help, and that help must come from the doctor who sends in the specimen.

DR. HERZBERG (closing): The point I want to bring out is, that you could many times get better service from your laboratory if the laboratory men knew exactly what you want. Give us some reasonable help in the nature of history or observation with your specimens, just a few points with the specimen. It is easy to do this, and you will get very much better service from your laboratory men.

SCIENTIFIC BABIES*

BY HERBERT B. WENTZ, M. D.

VERONA, NORTH DAKOTA

"Science is the formulation into laws of all known factors relating to or governing the movements or actions of the specific subject under consideration." (Funk and Wagnalls.) The accuracy of the formulation depends upon the accuracy of the observations, and the analytical and synthetical power of the mind which correlates the factors. The formulation, therefore, into laws of all the known factors relating to or governing the actions or movements of babies, will constitute the science, and its accuracy will depend upon the accuracy of the observations and upon the analytical and synthetical power of the mind which correlates the factors.

For the purposes of this discussion let us consider an ideal baby,—ideal in initial physical development, and potential mentality and spirituality.

The ideal baby should be easy of delivery.

The size of the ideal baby at birth must be determined by the size of the average female pelvis.

Michealis was professor of obstetrics at Kiel from 1843 to 1850, and during that time measured the pelves of one thousand consecutive cases. He designated as contracted all pelves in which the conjugata vera measured less than 8.76 centimeters. It, therefore, follows that the ideal baby for the German women of Kiel must have a head which measures not more than 8.76 centimeters in diameter. In this country and in England very few statistics are available on this subject, so for the present I will assume that the foregoing measurement is ideal. With a head diameter of 8.76 centimeters, the length of the body should be about 46 centimeters, and the weight about 3,250 grammes. The infant should possess a vigorous musculature; it should begin to respire as soon as born; it should possess an immediate appetite; it should have urinary and defecatory organs which will act within two or three hours of birth. The bones should be well developed, well ossified, and in close contact at their various sutures.

If at this time any one would like to propose additional qualifications which our ideal baby should possess I will gladly incorporate the suggestion, for I desire to present to this assembly

for consideration as complete an ideal as is possible.

The potential mentality, as I conceive the ideal, will comprise a brain which will develop ability to observe accurately, to correlate observations accurately, to deduce judgments with systematic precision, and to reason logically and effectively to true conclusions.

The potential spirituality I conceive to be a latent ability to grasp ideas from the other fellow's point of view and to act upon the precept of the golden rule.

This is my ideal of the "better baby," a cry for which has recently been raised among almost all classes of thinking women. The information as to how to accomplish this end should, nay, must, be given through the medical fraternity. If we are to give this information we must be ourselves informed; and we must instruct by example as well as by precept.

To attain the best results we must proceed scientifically. How shall we attain this end scientifically? By accurate observations of the factors entering into the question and by accurate analysis and accurate synthesis.

As statistics are not immediately available as to how to produce such a baby scientifically, in other words, a scientific baby I am forced to synthesize largely by analogy.

Dr. Oliver Wendell Holmes has well said that to be a success in life it is necessary that we begin by picking out good grandfathers and grandmothers. It is too late now for us to pick out our forebears, but we can assist materially in selecting the progenitors of our grandchildren to be, and we can help materially in determining the personnel which these grandchildren will possess through the laws of heredity. We can help mightily to make "better babies" of those children whom we may never see, if we set scientifically about doing so.

First: If you have not yet selected a wife see that you get one whose pelvic diameter is above 8.76 centimeters. This will help to insure an easy confinement, and will conserve the strength of your mate and also of the offspring. Second: If you are a woman with a sub-average pelvis select for a mate a man who has a small head. Analogous to these statements is the experiment made some years ago in hybridizing the American buffalo with the common cattle.

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

When the sire was selected from the buffalo the mothers and the calves all died during attempted delivery. When the sires were selected from among the cattle the progeny were delivered from the buffalo mothers with no difficulty, and hybridizing proved to be a complete success.

It is impossible for anyone to enforce scientific breeding for better babies with more than one person, and that one yourself. But if you have progeny the laws governing the transmission of parental characteristics will operate, whether you desire them to or not; therefore it is necessary for every thoughtful man and woman to take inventory of his or her own personal physique. It is almost impossible for a spindle-shanks to beget a child showing initially the physique of a Sandow, or for a Sandow to breed a spindle-shanks, though I shall show presently that such paradoxes may legitimately happen.

If, therefore, you want a child which will be nearer physically to the ideal than you are yourself, get yourself into gymnastic training as a pugilist does, so that your offspring may be begotten when you are in prime condition. Do not breed by chance! Get your children pre-meditatively!

There are no statistics upon the temporary condition of the parent becoming a permanent inheritance of the child, although we do hear alienists affirm that the children of drunkards are prone to become epileptics. I have, however, solicited testimony during the twenty-five years in which I have been collecting material upon the subject of this address, and I have also observed conditions affecting my own offspring.

Heredity is the sum total of the environment affecting countless generations. The environment of today is adding its iota to the virility of the child of tomorrow, or it is doing the reverse.

Napoleon's mother accompanied her husband on his campaigns and assisted him with his military maps and plans because she enjoyed the work. During this time the Little Corporal was conceived. Lincoln's mother had a strong desire to teach Thomas to read and write, a desire which was reciprocated by her husband. Abraham was conceived during this brief period when there was a strong parental desire for a "higher education." Franklin's parents had become reflective and philosophical when the eleventh child was added to the family. I once asked a Methodist minister if he could explain why one of his children was unusually wayward. He frankly told me that when the child was conceived he

was dabbling in politics, and had had a strong desire to be out with the boys and have a good time. He did not yield to the temptation, but he was convinced that the strong temporary desire was passed on to the child to become a permanent characteristic. A woman living in Whitehall, Wisconsin, getting a smattering upon the subject of heredity conceived the idea that she would have her unborn babe become a great musician. She accordingly, much against her inclination, took both vocal and instrumental instructions during the entire period of gestation. Her son, now a young man of twenty-six, detests music in any phase. I can see in my own children evidences of the strong temporary tendencies which prevailed with me when each was begotten. Each one of you who has children will note upon reflection the same phenomenon. It is a common experience.

An observation which will be confirmed by all present when I call attention to the fact, is this: Children born out of wedlock, or who have been conceived before the marriage of their parents, are invariably of a happy disposition, and, in most cases of excellent physique and good mentality. The unscientific mind at once jumps to the conclusion that I am advocating illegitimate conceptions. Nothing could be further from the truth. The scientific mind will immediately analyze the factors presented, and synthesize correctly to this: The mental and physical conditions which exist between parents before wedlock, should be the conditions after wedlock when conception is achieved.

Strong parental yearnings assist in shaping the character of the child; in affording it its assets in life; in moulding the characteristics of children yet to come in succeeding generations. The yearning has resulted from our environment, which environment differs in each individual case. The result is heredity,—the sum total of the effects of environment for numberless generations.

Certain laws govern our lives; nothing happens by chance, or haphazard. There is reason for everything. There is a cause for the black baby born to the white woman who is mated with a husband who has been bred so far away from the negro stock that he himself does not know until he has made investigation that he has Ethiopian blood in his veins.

The ameba will not be offended if I in part review its life-history, and recall to you that it multiplies by fission. The child ameba inherits by this process one-half of its parent, and, therefore, one-half of its parental proclivities. The

grandchild ameba contains one-fourth of its grandparent. The great grandchild ameba contains one-eighth of its great grandparent, and ad infinitum. The germ plasm, therefore, of the ameba carries with it to the remotest generation a concomitant fraction of its original ancestor. It is conceivable that the germ plasm of man contains also concomitant factors of each of his forbears.

Mendel, an Austrian monk, has made some interesting experiments; and from them he has deduced a law called after him the Mendelian law. Mendel hybridized a short garden pea with a tall garden pea. On sowing the seed from this crop he obtained a pea that was neither short nor tall,—a typical medium height pea. But the seed from this crop when sown showed a surprising growth. About one-fourth were short, about one-fourth were tall, and about one-half retained the hybrid medium characteristics. The seed from these medium peas showed the same phenomena in succeeding generations.

Professor William E. Castle, of Harvard University, mated black guinea-pigs of pure strain with white guinea-pigs of pure strain. The young pigs were all born black, the dominant or prepotent color. These pigs, however, when mated produced one white pig in each group of four, white being the recessive strain. Applying the Mendelian law we have this explanation: The factor of whiteness was submerged, dominated by the factor of blackness in the second generation; but half of the germ cells of the black individuals contained the factor of whiteness, and by the mere law of chance, the union of these germ cells brought together about one time in four, two of the cells having the submerged white factor, and such a union resulted in a white individual. Succeeding pigs bred from the experimental pigs showed the same ratio of variation.

The American trotting horse traces its ancestry back to Messenger. Messenger was speedy in what was to him a natural gait, but a gait unnatural to horses. His owner bred him to speedy mares, and from the progeny those showing the desired characteristics,—a natural speedy trot,—were selected and inbred. The results produced were other trotters, some of which were speedier than either of their parents. These were selected for further breeding, and the rest were discarded. Records were kept of these breedings. A pedigree was established which in time became a registered pedigree, and from Messenger developed Dan Patch; and the trotting

record has been cut from four, to less than two, minutes. The application of the Mendelian law will make this explanation: The germ plasm with a speed factor uniting with a germ plasm with a trot factor united to form a speedy trotter. This union would result about one time in four; to increase the chances of this union inbreeding was resorted to. The breeders obeyed the law without knowing that such a law existed; but, even so, the breeders have been obliged to do an enormous amount of discarding of colts, because when put to trial the then standard of trotting speed was not reached or passed. But the discards are not without value: there is always a demand for utility and family horses. Trotting horses are of various sizes, of many colors, and of variable temperaments, the breeder of trotters keeping but two things in mind: a natural unnatural gait and speed. Inbreeding increased the chances for securing the union of two germ plasms in which trotting and speed were the recessive factors.

I have already said that there are no available statistics upon the breeding of human beings, but much information can be obtained by a visit to the South in our own country. There are men there who know first hand of the slave-holding times, when on some of the plantations the black stock was handled like horses and cattle, and efforts were made to breed a strong, docile race of willing workers. A comparison of the "be-foah-de-wah niggahs" with those that have developed since the rebellion will convince the thoughtful observer that a mistake was made when the attempt was abandoned. From analogy it is fair to presume that the Mendelian law applied there, and it is only fair to assume that it applies to the white race, as well.

Constant inbreeding eventually produces a medium standard type in which the recessive factors are systematically submerged. These standard types so fix the racial characteristic of a people that we have no hesitation in saying this stranger from Europe is a Russian, that one is a German, that here is an Irishman, and that there is an Italian. Here is a family in which one of the parents is Irish and the other is German. The offspring are typical blends. Here is another family in which both parents are German-Irish, and we have an astounding medley of offspring. Following the Mendelian law, about one-fourth show the German strain predominantly, about one-fourth are pronounced Irish, and about one-half are of the typical blend, which is additional proof that the germ plasm has within it

component factors, derived from the progenitors of preceding generations.

Professor Galton has formulated these facts into a law, as follows: One-half of the hereditary traits of each individual is derived from the parents, one-fourth from the grandparents, one-eighth from the great grandparents, one-sixteenth from the next set of forbears, etc. Or, to state the law in a different way: One-half of the procreative germs in our bodies will produce offspring like ourselves, one-fourth of them will produce offspring like some one of our parents, one-eighth will produce progeny like some one of our grandparents, etc.

With these plain laws before us, from which, willy nilly, we cannot escape, it behooves each one of us to look to the pedigree of a proposed mate if we desire scientifically better babies.

In conformity to these laws it becomes possible for a spindle-shanks to beget a Sandow, or vice versa, provided that among the ancestry there existed a person of like characteristics. It explains the black baby born to apparently white parents. It explains the mulatto born to a couple one of whom is derived from a remote negro parentage. It explains atavism.

Inasmuch as we are a mixed race of people—we typical Americans—it is imperative that we look to our individual breeding, and properly instruct our children, or we produce a race of which more than three-fourths will be culls. If we mate as best we can we may expect improvement in but one child in four, but, even so, the other three are not waste: there is always a demand for utility men and general servitors, but none of us wish to be relegated to those classes, nor do we wish our children there.

To breed the best race I will call your attention to another observation from which you may draw your own analogical conclusion, viz.: In the animal kingdom no female is approached by the male unless she shows a desire to mate. It, therefore, follows that the female is undisturbed during the whole period of gestation. Neither is it thought best in breeding animals to mate them before they have reached maturity, which does not mean when they are capable of bearing young, but when they have attained their full growth, and their muscles and bones are attaining their maximum normal tone.

Properly to encourage those who are ambitious to attain in one bound the ideal child which we have conjured up as representing the acme of perfection, which numbers eight points of physical perfection,—six potential mental attain-

ments, and two spiritual essentials,—I will refer to the law of averages in heredity as mathematically formulated by the biometricians. If but one strain of improvement is desired we may look for the chances of obtaining it to be one in four,—that is, in a family of four children one only will show the improvement desired. If two improvements are desired in the same individual it will be necessary to have a family of sixteen, the chances for obtaining your desire being one in sixteen. If three improvements are wished in the same individual the chances are one in sixty-four. If four are looked for the chances are one in two hundred and fifty-six. Five improvements to one in 1,024. Eight to one in 65,536. Ten to one in 1,048,576. And when we desire sixteen, the number enumerated for our ideal offspring, our chances for obtaining them are the discouraging ratio of one in 4,294,967,296. So, if you would be wise, make a try for but one improvement, and, discarding the three children in your family who show it not, instruct the favored fourth in the necessary process for continuing the improvement, and in adding another to it in his or her offspring. In sixteen generations you may hope to have descendents who are perfect. Five hundred and thirty-three years is not long to wait for the consummation of so desirable an end,—let us thank God if it be attained by that time.

THE SCIENTIFIC BABY REQUIRES SCIENTIFIC NOURISHMENT

By reference to the text-books on obstetrics and nursing I find that the authors have scientifically reduced the babies to an average baby, and proceeded to reduce that baby to so much ash, so much water, so much proteid, so much carbohydrate, so much hydrogen, so much oxygen, so much iron, etc. I would give the figures, but I find that the books so differ in their analyses that figures would be useless. Upon the figures so given, however, for the average baby each author gravely announces that each individual baby has a burning capacity of so much, its stomach is so big, and, therefore, it requires so much of these several components every so often, depending on the author. The only difficulty I have experienced in putting into practice the excellent tenets of these various authors is the difficulty of obtaining an average baby upon which to apply them.

I have made a close study of babies,—babies of the dog, the cat, the mouse, the sheep, the horse, the hog, the cow. In each of the families

and species named the desire of the infant is the criterion which governs its early life. When it is hungry it feeds. When it is sleepy it sleeps. When it is tired it rests. Its mother keeps it clean, dry, and warm till it is able to do these things for itself. Cy de Vry, the veteran keeper of the Zoo in Chicago, says the same thing is true of the apes and monkeys bred in the gardens. From analogy I conclude that the scientific rearing of a human infant demands that we let its desires be the rule and guide of our conduct in its treatment during its early life. When it is hungry nurse it. When it is sleepy let it sleep. When it is tired let it rest; and keep it clean, warm and dry till it is able to do so for itself.

No two babies will time their hungry times alike, and no baby will get hungry at like intervals on any two consecutive days. These are observations which may be made by anyone.

In the animal world new-born infants manifest a desire to nurse within a few minutes after being born; and the puppy, the pig, the lamb, the calf, the colt that does not manifest this desire is looked upon by the husbandman with more or less anxiety. The human infant should also manifest a like desire to nurse, and it should be put to nurse as soon as the cleanliness of the patients will permit. This constitutes scientific feeding of the human infant. The infants of the animal world do not drink water before they desire water; therefore water should not be forced upon the human infant. I have argued from analogy; now I will demonstrate.

I have here two children who have been reared scientifically. This girl is three and one-half years old. She did not show a desire for water until she was past six months of age, and during that time received nothing but her mother's milk. The boy, who is two years old, was nearly six months of age when he manifested a desire for water, and during that time subsisted upon his mother's nourishment. The cutting of their incisors indicated that the alimentary canal was sufficiently developed to digest proteids other than what was contained in their natural food. Upon the cutting of their grinders, the starch foods were added, and the appearance of the canines signalized the admission of the full diet. Neither child has had a dose of castor oil, castoria, injections, or other aid to defecation. They are turned out of doors every day, and encouraged to gymnastics. They sleep soundly, and rise at daybreak.

I have here reports from a number of parents whom I have convinced that my system is truly

scientific, and in every instance the children are above the average in weight, size, and ruggedness. They are better babies—scientific babies.

Name	Actual Age	Age in Size
Eunice B.	2 yrs.	2½ yrs.
Clifford F.	7 mos.	1.5 yrs.
Hector F.	2 yrs., 4 mos.	3.5 yrs.
Arthur G.	1 yr., 5 mos.	2 yrs.
Irene J.	7 mos.	1.5 yrs.
Lloyd J.	3 yrs.	4.5 yrs.
Wm. K.	3 yrs., 5 mos.	4 yrs.
Sylvan L.	1 yr., 5 mos.	2 yrs.
Chas. L.	3 yrs.	4 yrs.
Raymond McC.	1 yr., 8 mos.	2.5 yrs.
Bridget O'D.	1 yr., 3 mos.	2.5 yrs.
Marie R.	2 yrs., 6 mos.	3.5 yrs.
Wm. T.	3 yrs., 3 mos.	4.5 yrs.
Robert U.	2 yrs., 8 mos.	4 yrs.
Dorothy W.	3 yrs., 5 mos.	5 yrs.
Merritt W.	2 yrs.	4 yrs.

In the cases where artificial food has been required I have studied the food requirements of the particular child. I have tried to ascertain the digestive habits and alimentary condition of both parents, the Mendelian law making it probable that the chances were even that the child would exhibit in a marked degree its parental proclivities, and I have combined cream, milk, and water in the proportions which would seem to meet the presumed demand. I have never failed to obtain excellent results where my instructions have been explicitly obeyed.

Scientific treatment does not consist in blindly following a text-book outline based on laboratory analyses—the reduction of a multitude of babies to an average baby. An average treatment cannot consistently be successfully applied to the special baby in hand.

Science is the formulation into laws of all known factors relating to or governing the movements or actions of the specific subject under consideration, and the accuracy of the formulation depends upon the accuracy of the observations, and the analytical and synthetical power of the mind which correlates the factors.

DISCUSSION

DR. L. B. GREENE (Edgeley, N. D.): The subject of eugenics is a very interesting subject, but it is one that I personally do not feel able to discuss. The points of heredity that he has brought forward are very interesting.

In regard to the feeding of infants; I think we have heard some very able discussions on the other papers. The fact that a child may come to the age of six months

before showing a desire for water, I do not think very remarkable because, by personal observation, I have noticed several adults that show no desire for water.

DR. W. A. GERRISH (Jamestown, N. D.): I have listened attentively to this paper. I am a good deal like Dr. Greene in that I do not feel qualified to discuss the paper. There are lots of good suggestions made that can be carried out, but trying to breed human beings for scientific purposes is a pretty difficult subject. We realize that the ideal baby is desirable, and we would all like to see it developed. I am too much of a pessimist to think that it will come in our day and 535 years is a long while in the future. If we are going to have a long war, I think we shall have to postpone the scientific part of our babies. We want to breed boys.

DR. H. E. FRENCH (University, N. D.): I enjoyed the paper, and I am sure I do not consider it a joke. In spite of the mistakes and foolish statements that have been made at different times in the name of eugenics, we are just beginning to get a little light upon the subject, which is surely going to be very powerful in its ability to bless the race.

If I understood Dr. Wentz correctly, however, or if he were serious in the one point, I think he is a little mistaken in his biology. One of the things of which the biologists are pretty sure nowadays is that there can be no inheritance of acquired characteristics. I cannot agree with the doctor, then, when he promises vigorous children to the "spindle-shanks" who, by training, becomes a Sandow. I cannot agree with him in this theory of the wayward son of the minister, and in several other of his examples. The Chinese have bound the feet of children, perhaps for centuries, but they have not developed a race of small-footed people. If, however, only those who have small feet by nature were to marry or to reproduce, no doubt, in time the effect would become obvious. The effect of alcohol upon the germ plasm may be a little different proposition. Data are conflicting, and at least there is good authority to think that the germ plasm can be affected by this poison. On the whole, however, the modern biologist does not accept the theory of the inheritance of acquired characteristics.

DR. WENTZ (closing): I have not very much to say in closing. I had intended to have my two children here to demonstrate what could be done in the way of scientific selection and training of babies. They were present for some time, but proved to be so restless that their mother was obliged to take them from the room. Your attention has no doubt been directed to them. The

little girl is three and a half years of age, and has the measurements for a child of five and a half; and the boy is just two, and has the measurements for a child of three and a half.

I can hardly agree with Dr. French's assertion that the temporary attitude of the mind of the parent at the time of conception does not affect the child. The alienist asserts without contradiction that the parents who conceive while intoxicated produce children epileptic or afflicted with some other nervous derangement. If Dr. Meigs were present, I would call him in testimony. He has a habit of scratching his head when perplexed. His father had the same habit. His grandfather, however, who wore a wig that used to get out of place frequently used to scratch it back into place when it became deranged. Hence, the hereditary habit.

I do not claim that all temporary mental attitudes are transferred to the offspring, but some of them are. It is therein that the race makes progress. The Mendelian law would make it evident that all of the physical and mental attributes of the parents are in some way contained in the germ plasm of reproduction. The germ plasm is contained in a cell which contains a nucleus, which contains a nucleolus, which is made up of molecules, which are composed of atoms, which are composed of electrons in such numbers that the total for the cell approximates two thousand billions. It is conceivable that each of the electrons has within it a latent characteristic of the individual, which, if united with a like electron from the mating cell, will become a dominant characteristic of the offspring. Other latent characteristics become recessive, and may appear in children of the second, third, and fourth, or later generation as dominant factors.

There is no question that the laws which apply to the improvement of ordinary animals apply equally to the human race, but the animal breeder has the power of mating his animals as he chooses with a definite strain of improvement in view, and, owing to the rapidity with which animals mature he can follow up for several generations the lines which he selects. If this could be done with the human race the dreams of the eugenist would come true, but, alas, there is no Methuselah to superintend the job, and, moreover, there is a perverse habit in the genus homo of falling in love and mating in the old-fashioned way. Still there is no question but what intelligent parents by acting upon the principles to which I have called your attention will, in the conception of, and in the training of, their children obtain better results than are now obtained in the haphazard way apparently so much in vogue.



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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

OCTOBER 1, 1917

THE MAYO AFFILIATION

Reference was made in a previous issue to the new affiliation offer presented by the Drs. Mayo to the University. The plan differs from the original one in that it is more definite in its outlines, more positive in its delivery, and strictly to the point. The former plan, which was evidently incomplete and very much misunderstood by the general public and the medical profession, was recognized finally as undesirable from both points of view, that of the University and that of the Mayo Clinic. Consequently, the new plan was made and has been accepted as a proper disposal of the gift of a fund which ultimately will be under the absolute control of the University of Minnesota.

The proposition in the main is that the present fund of \$1,650,000, which has been gradually accumulating, is to be added to until it reaches the sum of \$2,000,000. The expectation is that this amount will be raised within a few years, and at the end of twenty-five years this entire fund is to be under the absolute control of the Board of Regents. Until such time, the income from the fund will be expended as heretofore by the Drs. Mayo, under the direc-

tion of the Board of Regents, but still to be expended in Rochester, except for such small sums as may be necessary for research work outside of the state or outside of the city of Rochester.

Considering the present condition of affairs, including the war and the exodus from the Mayo Clinic of various members of the staff, and the public participation in the war of both Drs. Wm. J. and C. H. Mayo, either in this country or in France, the new offer is timely, and it is well to close the affiliation controversy. These men are giving to the Government the entire services of one of them at all times, either in an advisory or an active capacity, at home or abroad. Hence the Clinic will be minus the advice of one or the other of the Mayos; and it may sometimes be placed in an embarrassing position, particularly as to the raising of the fund to the \$2,000,000 point.

The first plan of affiliation met with a great deal of opposition, and a large proportion of the medical men throughout the state were antagonistic to its details. The lay people, however, were very enthusiastic, and believed that the gift proposition should be promptly accepted; but, on account of the opposition which developed in the medical profession and among a few of the laymen, and the attempt to prevent the affiliation by legislative action, the plan was not well received; and the Mayos, broad-minded as they are, were led to believe that the new proposition could be made more acceptable to the medical profession, to the public, and to themselves; and, as a result of this conference between themselves and others, the present plan was matured, and has been accepted unanimously by the faculty of the Medical School and by the Board of Regents.

THE JOURNAL-LANCET has endeavored to present in as fair a way as possible the objections and the advantages of the old plan, and in doing so it has left the matter open for each individual reader. The present plan, however, seems in every way advisable and acceptable, and certainly magnanimous. It gives the Mayos an opportunity to keep up the work which they have built up by time, labor, and talent, as well as expense, in the end to turn it over to the State free from incumbrance and practically free from influence.

The new proposition provides for a three-year notice to be given by the Regents before any change is made in the distribution of the income from the fund by the University. This

is a perfectly fair proposition because it is an attempt to take care of the men who participate in the graduate course in Rochester, that is, it permits them to carry out and fill out their term of two or three years with the Mayo Clinic. Undoubtedly the University will profit by this stimulation, and the research work and the undergraduate work will be improved in every possible direction; and the possibilities, too, are that an enlargement of the teaching force in Rochester will be a part of the general plan, so that there will be no conflict between the teachers of research in Rochester and those who are instructing at the University. That has been a point upon which some men have split in their opinions, but it seems to us that these things can be worked out in detail to the satisfaction of everyone.

It probably will never be definitely understood within the lifetime of the present generation that this gift is not immediately handed over to the University for the distribution of its income. That has been one of the stumbling-blocks, too, of the old proposition. People in general, and people at a distance, felt that the gift by the Mayos was most magnanimous; and they could not understand why objections to it were made. Now we all understand that this fund will eventually go to the University. Therefore THE JOURNAL-LANCET congratulates the donors and the receivers, and is firmly of the belief that the proposition is thoroughly acceptable, and will be favorably received by former objectors.

IMPROVED HEALTH CONDITIONS IN THE ARMY

When America began to organize its military forces, naturally everything was in a more or less chaotic state, and the examination of recruits was frequently very hastily performed, and it has been reported that in the first training-camps it required a good deal of weeding out of the unfit to create an efficient reserve or trained corps of men. The registration-board and boards of exemption evidently were instructed, or at least they evidently considered it their duty, to accept all men who were seemingly sound, and a good many men were accepted by a majority vote of a board in opposition to its examining physician. Then, too, it was understood that the examinations were very superficial, as is the case in all such emergencies. Now that the training-camps have been established,

and some of them are receiving their second classes, it has been found that the health of the applicants is very much improved. Although some have gotten in through error, they are being weeded out by army surgeons and special examiners who have been sent from many cities to facilitate the work of the local men in the forts.

It has been found that, although the percentage of venereal disease was quite large in the second classes, and that a little better grade of men, physically speaking, are being received now, and more care is taken to eliminate the unfit. In spite of this, however, there have been found by the examiners a number of peculiar conditions among the officers' corps, that is, many peculiar diseases have been found, some of them very difficult to diagnose. Others developed after the soldiers had been in camp for a few days or a few weeks. Some deaths have occurred from chronic diseases, such as tuberculosis and diabetes and other diseases that might have been detected earlier. It is estimated, too, that from one to two per cent of all applicants will be rejected on neurological or psychiatric grounds. This percentage is said to vary in different parts of the country, two per cent in the South and one per cent in the North. These figures will perhaps not always be stable, and it is not strange that a certain number should be rejected on account of mental unfitness.

Much more work has been done latterly in regard to the care of the soldiers from a sanitary and hygienic point of view. There is much less venereal disease in the second line of recruits than in the first line, both gonorrhea and syphilis. The demand for recruits has brought out this fact, and the exemption boards have been called upon to eliminate men with acute venereal conditions, although they have not been asked to debar men who have had syphilis and who are seemingly recovered. It is still thought that these men may be fit for service. They probably would be for a time, but the strenuous training and the various other things that come under military exactness, will either start up or put into activity a latent syphilis or an old gonorrhea. Then these men will be unfit for service. Either they will be a burden upon the hospital organization, or they will be discharged and returned home as sick.

It is interesting to note that a few cases of dementia precox have been found in the camps. These men are more or less stupid, indifferent, unmanageable, unable to concentrate their at-

tention, and unequal to the training methods. They are not fit subjects for the officers' corps, and it is hardly likely that any of these persons will pass. This same condition has been met with all over the country, and doubtless the weeding-out process will be carried on, from time to time, particularly in the officers' training-camp, and doubtless a good many of the privates will be retained who will later be found unfit for service, retained at least for a period of time when their weaknesses and illnesses and instability, physical or mental, will come to the surface. A man who is well makes a good soldier; a man who is sick makes not only a poor soldier, but he is a burden upon the army. Nothing contributes to the good health of a man more than good habits, good morals, and the absence of any temptations which are commonly found in the neighborhood of camps. This demands the control and elimination of saloons within definite districts, and the absolute control, and preferably the exclusion, of all prostitutional temptation. It is well known that, in spite of the efforts of the officers and the Government, men who have a leave of absence have been known to drink, and a number of depredations have occurred, and men have even been found drunk who become more or less criminal in their tendencies. The Government seemingly moves slowly, but it must do so, of necessity, for a great organization can not be built up in a short period of time. It requires intensive work, intensive training, and slow and gradual development of the force before it becomes manageable and efficient. A promising young surgeon at one of the camps was asked how he had spent his morning. He replied by saying that he had been trained in the currying of a mule. This seems a very trivial matter. As a matter of fact, it is quite as important as some other training. A man who knows things of this kind makes a better officer, a better man, and a better companion for his soldiers. If a man knows how to do the little things well, he can do and tell others how to do the greater things. It is no disgrace, either, for medical men, or other men, to receive all kinds of instructions, whether it be washing windows or examining raw recruits. If he does one thing well, he can readily learn to do other things well.

IMPORTANT HEALTH PROGRAM

Every man or woman in the Northwest who is interested in local or state health problems

should attend all the sessions of the Mississippi Valley Conference. All Minnesota physicians who are going to attend the meetings of the State Medical Association should at least come in time to take in the last day of the Conference. The timely topics to be presented by distinguished speakers from far and near make the entire program, and especially that of the last day, one that few will find other than interesting and helpful.

The dates for the State Medical Association's annual meeting are October eleventh and twelfth. Many physicians, not only from Minnesota, but from neighboring states, are planning to take the entire week off in order to obtain full benefit from the three meetings in St. Paul. This is the first time, and possibly the last for several years, that this section of the country will be honored by a meeting of such importance as The Mississippi Valley Conference. The way to show our appreciation is to turn out in big numbers, and absorb as much knowledge as possible.

THE ANNUAL MEETING OF THE MINNESOTA STATE MEDICAL ASSOCIATION

There will be found in this issue of THE JOURNAL-LANCET a program of the Minnesota State Medical Association, which meets in St. Paul on October eleventh and twelfth at the St. Paul Hotel. The program is very full, and the committee on program has seen fit to begin the meetings very early in the morning, eight-thirty being the schedule time; consequently doctors who have work to do before the early morning session will find great difficulty in getting around. Doctors from the country who come to the meeting will probably dislike getting up so early in the morning. It is hoped, therefore, that the President's Address, to be given by Dr. Harper M. Workman at eight-thirty in the morning, will be attended by a majority, if not all, of the members of the Association who attend the meeting.

There are many good things on the program, as one will see by reading it over,—some symposiums, some research work, and more or less surgery.

On Friday at two o'clock Dr. Archibald Church, a noted neurologist of Chicago, will deliver an address at a joint session on "The Social Value of Cranks." Those who know Dr. Church know that his subject will be very interestingly presented.

The banquet occurs Thursday evening in the St. Paul Hotel, and the plates are two dollars each.

The House of Delegates will meet on the afternoon of October tenth, at two o'clock, when the usual business of the Association will be transacted.

It is to be hoped that the Association meeting will be well attended, though many men are either in Government service, some abroad and some at home, and others are occupied with service within their own districts who may feel that it will be impossible for them to attend the meeting. Let us hope, however, that the St. Paul meeting will be one of the usual kind, full of delegates, full of interest, and full of the usual St. Paul hospitality.

REPORTS OF SOCIETIES

PROGRAM OF THE ANNUAL MEETING OF THE MINNESOTA STATE MEDICAL ASSOCIATION, 1917, AT ST. PAUL

October 10-12

OCTOBER 10, 2:00 P. M.

The House of Delegates will meet in the Windsor Room of the Saint Paul Hotel.

JOINT SESSION

THURSDAY, OCTOBER 11, 8:30 A. M.

President's Address - - Dr. Harper M. Workman

SECTION IN MEDICINE

THURSDAY, OCTOBER 11, 9:00 A. M.

1. *Myasthenia Gravis, with Report of Three Cases*—Dr. L. M. Crafts, Minneapolis. Discussion opened by Dr. W. A. Jones, Minneapolis.

2. *Gastric Crises*—Dr. E. L. Tuohy, Duluth. Discussion opened by Dr. Chas. R. Ball, St. Paul.

3. *Rickets, with Special Reference to Premature Children*—Dr. E. J. Huenekens, Minneapolis. Discussion opened by Dr. J. T. Christison, St. Paul.

4. *Treatment of Pneumonia*—Dr. J. S. Gilfillan, St. Paul. Discussion opened by Dr. Geo. Douglas Head, Minneapolis.

5. *Remarks on the Birth-Rate*—Dr. F. L. Adair, Minneapolis. Discussion opened by Dr. J. C. Litzenberg, Minneapolis.

THURSDAY, OCTOBER 11, 2:00 P. M.

6. *The Selection of Donors for Transfusion*—Dr. A. H. Sanford, Rochester. Discussion opened by Dr. I. de J. Pemberton, Rochester.

7. *The Orthopedic Treatment of Deformities Resulting from Incurable Paralysis*—Dr. A. J. Gillette, St. Paul. Discussion opened by Dr. E. S. Geist, Minneapolis.

8. *Prevalent Physical Defects in Older Children*—Dr. A. E. Johann, Minneapolis. Discussion opened by Dr. Walter R. Ramsey, St. Paul.

9. *The Relationship of the Function of the Thyroid to the Other Glands of Internal Secretion*—Dr. E. C. Kendall, Rochester.

10. *Treatment of Acute Infections with Injections of Foreign Protein*—Dr. J. G. Cross, Minneapolis. Discussion opened by Dr. Geo. E. Senkler, St. Paul.

FRIDAY, OCTOBER 12, 9:00 A. M.

11. *Some Popular Fallacies Regarding Pediatrics*—Dr. W. R. Ramsey, St. Paul. Discussion opened by Dr. F. W. Schlutz, Minneapolis.

12. *Pellagra: A Report of Five Cases*—Dr. Chas. T. Granger, Rochester. Discussion opened by Dr. Sam. Sweitzer.

13. *Soldier's Heart*—Dr. Chas. Lyman Greene, St. Paul. Discussion opened by Colonel Greenleaf, Ft. Snelling.

14. *Observations on the Graphic Recording of Reflexes*—Dr. R. E. Morris, Minneapolis.

15. *Digitalis Lutea*—Dr. S. Marx White, Minneapolis. Discussion opened by Dr. J. M. Northington, Minneapolis.

FRIDAY, OCTOBER 12, 2:00 P. M.

JOINT SESSION

Oration in Medicine: *The Social Value of Cranks*—Dr. Archibald Church, Chicago.

Oration in Surgery—Dr. Samuel Jason Mixter, President American Surgical Association, Boston, Mass.

FRIDAY, OCTOBER 12, 3:00 P. M.

SYMPOSIUM ON CEREBROSPINAL MENINGITIS

The Epidemiology of Poliomyelitis and Cerebrospinal Meningitis—Dr. A. J. Chesley, Minneapolis.

The Pathology—Dr. E. T. Bell, Minneapolis.

The Symptoms and Diagnosis—Dr. E. M. Hammes, St. Paul.

The Treatment—Dr. T. L. Bimberg, St. Paul.

Report of the Minneapolis Epidemic of 1916-17—Dr. Max Seham, Minneapolis.

SECTION IN SURGERY

THURSDAY, OCTOBER 11, 9:00 A. M.

1. *Some Points of Possible Interest in the Treatment of Bone and Joint Infections*—Dr. W. L. Palmer, Albert, Lea. Discussion by Dr. M. S. Henderson, Rochester.

2. *Drainage of Infected Joints*—Dr. G. R. Curran, Mankato. Discussion by Dr. R. E. Farr, Minneapolis.

Surgical Bursa—Dr. George Earl, St. Paul. Discussion by Dr. Earl R. Hare, Minneapolis.

4. *Colles' Fracture*—Dr. Owen W. Parker, Ely. Discussion by Dr. J. J. Donovan, Litchfield.

5. *Fractures of the Head of the Radius*—Dr. Emil S. Geist, Minneapolis. Discussion by Dr. W. H. Magie, Duluth.

6. *Fractures of the Tibia*—Dr. Arthur W. Ide, Brainerd. Discussion by Dr. Harry P. Ritchie, St. Paul.

7. *Treatment of Fractures of the Hip in the Aged*—Dr. Charles C. Allen, Austin. Discussion by Dr. James E. Moore, Minneapolis.

THURSDAY, OCTOBER 11, 2:00 P. M.

1. *Pathology and Treatment of Osteomyelitis*—Dr. Alexander R. Colvin, St. Paul. Discussion by Dr. A. J. Gillette, St. Paul.

2. *A Consideration of the Tonsil Question*—Dr. Norven H. Gillespie, Duluth. Discussion by Dr. Frank E. Burch, St. Paul.

3. *Focal Infections in the Nose and Throat: Means of Diagnosis and Elimination*—Dr. W. E. Patterson, Minneapolis. Discussion by Dr. Chas. N. Spratt, Minneapolis.

4. *Tonsils: A Cause and Tonsillectomy a Cure for Rheumatism*—Dr. J. H. James, Mankato. Discussion by Dr. Frank C. Todd, Minneapolis.

5. *Early Diagnosis and Treatment of Maxillary Antrum Suppuration*—Dr. W. L. Burnap, Fergus Falls. Discussion by Dr. F. M. Turnbull, Duluth.

6. *The Treatment of Lymphedema by the Kondoleon Method*—Dr. W. E. Sistrunk, Rochester.

7. *Cæsarean Section*—Dr. H. T. McGuigan, Red Wing. Discussion by Dr. Jennings C. Litzenberg, Minneapolis.

FRIDAY, OCTOBER 12, 9:00 A. M.

1. *Tuberculosis of the Kidney*—Dr. A. C. Baker, Fergus Falls. Discussion by Dr. J. C. Masson, Rochester.

2. *Nephrolithiasis*—Dr. Arthur C. Strachauer, Minneapolis. Discussion by Dr. Chas D. Freeman, St. Paul.

3. *The Treatment of Tumors of the Bladder*—Dr. William F. Braasch, Rochester. Discussion by Dr. Oscar Owre, Minneapolis.

4. *Jejunostomy: Indications and Methods*—Dr. C. H. Mayo, Rochester. Discussion by Dr. J. W. Little.

5. *Intestinal Obstruction: A Clinical Study of Forty Cases under Personal Observation*—Dr. Archibald MacLaren, St. Paul. Discussion by Dr. A. J. Bradon, Duluth.

6. *Congenital Dilatation of the Colon (Hirschsprung's Disease)*—Dr. A. E. Sohmer, Mankato.

7. *Surgical Management of Cerebral Hernia*—Dr. Arnold Schwyzer, St. Paul. Discussion by Dr. E. Starr Judd, Rochester.

The banquet will be given Thursday evening. Price per plate, \$2.00.

Information concerning alumni meetings will be given out at various times.

BOOK NOTICES

COLLECTED PAPERS OF THE MAYO CLINIC, 1916. Price, cloth, \$6.50; half morocco, \$8.50. Philadelphia and London: W. B. Saunders Company, 1917.

As usual, this is all meat and no waste, and in itself forms a review of the most important subjects under consideration during the year. There is no waste in introductions, and no circumlocution or lingering about the stage after the last word has been delivered. Ancient history is omitted, and the Mayo brand of twentieth-century directness is in evidence everywhere. The following classification of the one hundred papers will best show the variety of subjects covered:

Alimentary canal	29 papers
Urogenital organs	18 papers
Ductless glands	14 papers
Blood	7 papers
Head, trunk and extremities	15 papers
Technic	6 papers
General subjects	11 papers

—HEDBACK.

PHYSICAL EXERCISES FOR INVALIDS AND CONVALESCENTS.

By Edward H. Ochsner, B. S., M. D., F. A. C. S., President of the Illinois State Charities Commission, Attending Surgeon to Augustanna Hospital, Chicago, Ill.; etc. St. Louis: C. V. Mosby Co., 1917.

Both the profession and the laity have been in need of a cheap, compact, well-illustrated book on simple exercises to aid convalescents and persons habitually physically inactive, in the restoration of health. Physicians and patients alike have too long neglected this essential method in overcoming disease, and will welcome this volume as an aid.

The numerous illustrations make it easy for the patient to carry them out. While not giving all exercises that might be of benefit to convalescing patients it is of great value, and no doubt will be utilized by all branches of the profession.

—BENJAMIN.

TEXT-BOOK OF OPHTHALMOLOGY. By Hofrat Ernest Fuchs, Professor of Ophthalmology in the University of Vienna. Authorized translation from the Twelfth German Edition by Alexander Duane, M. D., Surgeon Emeritus, Knapp Memorial Hospital, New York. Fifth Edition. Cloth. Price, \$7. Pp. 1067, with 462 illustrations. Philadelphia: J. B. Lippincott Company, 1917.

The new (fifth) edition of Fuchs' text-book is unique in that it is not a mere translation of a late German edition, but is practically an entirely new work in the English language based upon the original book.

There are many additions and changes by Professor Fuchs and a radical rearrangement with numerous additions to the text by the translator, Dr. Duane.

There can be no question that the present edition is a distinct improvement on its predecessors. There is the same lucid clearness of diction which characterized Professor Fuchs' clinical lectures and which have made his text-book the bible of ophthalmology.

Dr. Duane's pre-eminent ability as a translator and editor are too well known to require comment.

—A. E. SMITH.

INTERNATIONAL CLINICS. Vol. 1, 1917. J. P. Lippincott Co., Philadelphia and London. Price, \$2.00.

An article on the "Medical Treatment of Gastric and Duodenal Ulcer" covers the field from the well-known Lenhartz to the more recent Sippy treatment.

Russell H. Boggs, Dermatologist and Röntgenologist, describes the action and therapeutic value of radium in the treatment of epithelioma. There are presented a number of before and after illustrations.

A short article by Dr. Curran Pope, of Louisville, Ky., reviews the current methods used in combating atrophy and deformity resulting from poliomyelitis.

"Syphilis as an Etiological Factor in Lannee's Atrophic Cirrhosis of the Liver," by Douglas Symmers, is illustrated with photographs. He discusses the secondary rôle that alcohol plays in the etiology of this disease.

Dr. Max Askansgy, Professor of Pathology at the University of Geneva, gives an interesting account of his personal researches on the vague nature of chloromata.

A very complete report of a case of "Aneurismal Obstruction of the Vena Cava, with Special Reference to the Caval Syndrome," is given by P. G. Skillern, of Philadelphia.

"Some Adenomatous Tumours of the Abdominal Viscera," by F. Parkes Weber, of London, is made additionally interesting by reports of cases and photomicrographs.

Albert Abrams gives the technic and value of his electrotonic reactions in the diagnosis of syphilis and tuberculosis.

In the department of dermatology, Gardiner of Edinburgh University describes two cases of acne necrotica.

An interesting article appropriately entitled "The Tangled Skein," by Madison Taylor, deals with mental invalids. "A Study in Superstition," by J. P. H. Murphy of Washington runs the gamut of these fallacies.

"The Treatment of Dislocations and Fractures of the Outer End of the Clavicle," "Local Anesthesia in the Surgery of the Rectum and Colon," and "Congenital Talipes Equinovarus" comprise the surgical portion of this volume.

The book closes with a review of the progress of medicine during the year 1916. —SIMONS.

PRACTICAL MEDICINE SERIES, 1917, Vol. I, General Medicine. Chicago: The Year Book Publishers. Price of this volume, \$1.50; price of series of ten volumes, \$10.00.

This volume reviews the literature of the previous year of the following subjects: (1) "Research Work, Experimental Medicine and Laboratory Technique," (2) "Infectious Diseases," (3) "Diseases of the Chest," (4) "Diseases of the Heart," (5) "Diseases of the Blood-Vessels," (6) "Diseases of the Blood and Blood-Making Organs," (7) "Diseases of the Ductless Glands," (8) "Diseases of Metabolism," (9) "Diseases of the Kidneys," and (10) "Poisoning."

Much of the new work on infectious diseases, such as the cutaneous tuberculin reaction, chemotherapy of tuberculosis, specific treatment of pneumonia, Trench fever, etc., is carefully summarized.

Among the many important topics reviewed may be mentioned bronchial asthma, cardiac, arrhythmias, "soldier's heart," and recent studies of problems in nephritis.

The volume is, as a whole, one of the best ever published, and is well worth the price for the bibliography alone. —GARDNER.

NEWS ITEMS

Dr. W. O. Tessier, of Oklee, has moved to Red Lake Falls.

Dr. H. W. Hanson has moved from Dawson to Cottonwood.

Dr. W. W. Brown, late of Morton, has located at Cottonwood.

Dr. H. C. Norriss has moved from Enderlin, N. D., to Philip, S. D.

Dr. G. F. Swimmerton, of International Falls, will locate in Minneapolis.

Dr. James Lee, of Lake Preston, S. D., will move to Lake Norden, S. D.

Dr. O. C. Maercklein has moved from Dickinson, N. D., to Mott, N. D.

Dr. D. W. Watthaei has moved from Fessenden, N. D., to Carrington, N. D.

Dr. F. J. Christie, of Burlington, N. D., has decided to move to Deering, N. D.

The Minnesota State Sanitary Conference meets in St. Paul on October 10 at 10 A. M.

Dr. Asa Johnson, of St. Paul, was married last month to Miss Hazel Perry, of Ft. Defiance, N. M.

Dr. H. A. Pinault, formerly of Minneapolis, died last month at Pass Christian, Miss., at the age of 73.

Dr. H. E. Michelson has moved from Virginia to Minneapolis, and is associated with Dr. F. R. Wright.

The Central Minnesota Society held a meeting last month at the summer home of Dr. B. J. Branton at Eagle Lake.

Dr. S. S. Shannon, of Barnum, has moved to Wadena, and will take the practice of Dr. P. E. Kenyon, who is in the Reserve Corp.

The Drs. McGregor, of Chouteau, Mont., now occupy their new hospital building which contains twenty-seven rooms for patients.

Dr. Guy Ramsey, of Salem, S. D., has sold his practice to Dr. A. E. Gage, of Peterson, Iowa. Dr. Ramsey will move to Philip, S. D.

St. Luke's Hospital of Aberdeen, S. D., is planning to conduct a nurses' training-school, which will be probably one of the largest in the Northwest.

The physicians of Lake and adjacent counties of North Dakota have adopted a uniform fee bill, such as has been adopted in other counties of the state.

October 17 is "Tag Day" in Minneapolis, and the Visiting Nurses' Association hopes to receive a generous recognition of its work, which was never more urgent.

Dr. J. F. Snyder, of Hazelton, N. D., died last month at the age of 53. Dr. Snyder was the first physician to locate in Braddock and also the first in Hazelton.

Dr. L. H. Salmon, of St. Paul, died last month at the age of 25. Dr. Salmon was on the staff of the St. Paul City and County Hospital. He lost his life by drowning.

Dr. L. G. Rowntree, Chief of the Department of Medicine of the University of Minnesota, has refused a call to the University of Illinois, and will remain in Minnesota.

Sioux Falls, S. D., issued a physician's license to prescribe liquor to Dr. W. E. Moore, who has relinquished his license, and now no one in Minnehaha County, S. D., can dispense liquor.

Dr. Irving J. Cross, of Bellingham, Wash., has moved to Wahpeton, N. D., and formed a partnership with Dr. N. J. Shields, of that place, under the firm name of Drs. Shields & Cross.

Dr. A. B. Ancker, superintendent of the St. Paul City and County Hospital, was elected president of the American Hospital Association at their annual meeting, held in Cleveland, O., last month.

The annual meeting of the Soo Surgical Association will be held in Chicago October 22 and 23, these days being the first two days of the meeting for a week of the Clinical Congress of Surgeons of North America.

The physicians of Watertown, S. D., have agreed to care for the patients of Watertown physicians in the army, and to deposit to the credit of each absent physician one-fourth of all money collected from his patient.

It has been reported at different times that Dr. Robert Guilmette, of Minneapolis, had been killed in France while in hospital service. The report is not correct. Dr. Guilmette is in England engaged in war hospital service.

Dr. G. E. Putney, of Paynesville, has been appointed by Governor Burnquist a member of the State Board of Medical Examiners in the place of Dr. P. C. Pilon, who resigned because of his absence in the Medical Reserve.

Minneapolis' third Health and Happiness Week, to be observed this month, will interest more people in the city than ever before because more organizations have endorsed it and appointed committee members to aid in pushing the big effort for public health to a successful conclusion. It will be conducted on October 6 to 12.

Dr. John Allen Bernard, who had practiced in Minneapolis for twenty-five years, died last month at the age of 72. Dr. Bernard was president of the 1889 Class of the Medical School of the University of Minnesota, which is regarded as the first regular class, although the school was organized in 1884.

As noted in an editorial on another page, the new plan of the Mayo affiliation has been adopted by the Board of Regents of the University of Minnesota. Under the new offer made by the Drs. Mayo, the affiliation may be terminated by the Regents at any time after twenty-five years upon notice of three years, without surrendering the endowment fund of nearly two million dollars, given by Drs. Wm. J. and C. H. Mayo.

Following the announcement that Samuel Gompers, President of the American Federation of Labor, had endorsed Health Week, the Minneapolis Building Trades Council has appointed a member for the week's general committee. The Retail Merchants' Association has also endorsed the idea, and appointed a co-operating committee. Another hand that appeared on the wheel during the week was that of the Fifth District Federated Women's Clubs.

Practically final plans have been announced for the fifth annual Mississippi Valley Anti-Tuberculosis conference to take place in Minneapolis on Monday and Tuesday, October 8 and 9, in conjunction with the second and third days of Health and Happiness Week. The week will open with a mammoth parade at 2 p. m. Saturday, October 6. Prominent on the program for the conference are such important features as a demonstration of the most advanced method of conducting a free public dispensary, to be conducted by Dr. W. J. Marcle, of Minneapolis; a special conference session for institutional nurses, in the hands of Miss Helen B. Freer, a prominent Chicago nurse; a meeting for state sanatorium officials; and, on the last day, a discussion of war health problems, joined in by six or eight authoritative speakers from all parts of the United States.

PHYSICIAN WANTED AT ONCE

In a good town in Western Minnesota. Address 576, care of this office.

LOCATION OPEN

Physician wanted in a town of 500 in a good farming country; good business. Address L. E. Sasse, Druggist, Vienna, S. D.

PHYSICIAN WANTED

In a live, growing village, with good territory. Settlement largely Scandinavian. An excellent opening. Address 578, care of this office.

OFFICE FOR RENT

I will sublease my office in the Syndicate Building, Minneapolis, three rooms and reception-room. Rent, reasonable. Address 577, care of this office.

X-RAY MACHINE FOR SALE

A static x-ray and high-frequency machine; complete equipment; man or motor driven; good order. Bargain. Address P. O. Box 702, Aberdeen, S. D.

HOSPITAL FOR SALE

A small private hospital located in the Twin Cities is for sale. Patronized by the leading physicians. For further information address 583, care of this office.

MINNEAPOLIS OFFICE FOR RENT

A dentist would like to share office with a physician. Excellent location in Minneapolis. Large, light office. Steam heat, hot water, low rent. Address 582, care of this office.

ASSISTANT WANTED

Assistant wanted to general surgeon in Southern North Dakota. State qualifications, references, nationality, religion, and salary expected in first letter. Address 572, care of this office.

PART OF ST. PAUL OFFICE FOR RENT

A dentist desires to rent to a physician two private rooms and to share with him a large reception-room on the third floor of the Lowry building, St. Paul. Address room 304, Lowry building, St. Paul.

DESIRABLE OFFICES FOR RENT

I desire to sublet my offices in the P. & S. Building, Minneapolis, for part or whole time. Will rent one or three private rooms with share in reception-room at very reasonable rates. Address 567, care of this office.

PARTNER WANTED

In a good town in Southern Minnesota. I am alone at present. Always have been two physicians here before. Will make good offer to right man. Town has high school and electric lights. Address 584, care of this office.

PRACTICE FOR SALE

Wanted a physician to take over a well established unopposed practice of \$4,000 to \$5,000 in a growing town of 550 on main line of railroad in southwestern Minnesota. Collection 99 per cent. Includes insurance, county poor appointments and small stock of drugs. Will bear inspection. Terms to suit. Am commissioned in Medical Reserve Corps. Address 563, care of this office.

PRACTICE FOR SALE

Practice offered to physician who buys my equipment invoiced at \$600. Modern office rooms in village of 800 about 60 miles from Minneapolis; good territory. I am in the Medical Reserve, and leave soon. Address 573, care of this office.

LOCATION WANTED

Position desired in the office of some physician going into the army, or as assistant to some surgeon with large practice, by an experienced M. D., familiar with microscopy, x-ray work, and general surgery. Address 580, care of this office.

ASSISTANT WANTED

I want an assistant to help me in my general practice in village of 400 in North Dakota, the next six to eight months. Prefer single man, recent graduate, well qualified. Will pay liberal salary to right man. Write and send references. Address 568, care of this office.

PRACTICE OFFERED

Practice free for period of war in return for rental of office and purchase or rental of house. Modern Minnesota village of 400, no competition, rich country, over \$5,500 practice. I leave in six weeks. Must purchase part of good office equipment. Address 581, care of this office.

X-RAY APPARATUS FOR SALE OR EXCHANGE

I will sell at a low price or exchange for an automobile (roadster) a Scheidel-Western 18-inch x-ray coil and high-frequency combination equipment in first-class order. Roadster must be in A-1 condition. Address Dr. P. W. La Plount, Suite 424, 622 Nicollet Ave., Minneapolis. (Phone, Nic. 2925.)

POSITION WANTED

Am 43 years old, have had one year's hospital experience, two years of postgraduate work, and eighteen years' private practice. Am married and have family consisting of one child. American born. Will consider partnership. Registered in North Dakota, South Dakota, and Iowa. Address 569, care of this office.

PRACTICE FOR SALE

In Southern Minnesota town of about 1,100. Two main line railroads, electric light, city water, good schools, churches, banks, etc. First-class, thickly settled American farming territory. Very satisfactory competition. County and insurance appointments. Price and terms reasonable to satisfactory party. Address 574, care of this office.

PRACTICE OFFERED

A \$10,000 unopposed, general and surgical practice in a town of 600 people, rich community, for the price of hospital and office fixtures. Hospital is nine rooms and thoroughly equipped, have two graduate nurses all the time. Hospital is self-sustaining. Must be able to do surgery. Hospital is equipped with x-ray, microscope and cystoscope and everything necessary for successful work. Price of all is \$2,500, half down and balance in one year. Will sell half interest and will make arrangements when you investigate it. Have a commission in the Medical Reserve Corps and will go in thirty to sixty days. Address 579, care of this office.

PUBLISHER'S DEPARTMENT

THE STANDARD MEDICAL SUPPLY COMPANY

All physicians and surgeons who attended the last meeting of the Minnesota State Medical Association will remember the display of instruments, appliances, etc., shown by the above Company; and they will be glad to know that a larger display will be made at this year's meeting at St. Paul. The two machines illustrated in the Company's announcement on another page will be exhibited and demonstrated, and will be well worth examination by all men doing work with modern electrical appliances.

LAVORIS

Every physician knows exactly what effect zinc chloride produces upon the tissues of the body, and also knows that no other agent will do the same work so uniformly and so satisfactorily. He also knows that zinc chloride is an unstable compound, and its therapeutic effect cannot be easily obtained unless it is in a permanent solution.

Lavoris is zinc chloride in perfect and permanent solution, and it has given universal satisfaction to the medical men, for it furnishes them an antiseptic whose value they know, and it is exceedingly pleasant to use.

THE MINNESOTA SANITARIUM

The above-named institution is a home-like sanitarium for the treatment of nervous and mild mental cases and drug and alcohol addicts. It has a commodious and attractive remodeled residence building at 1926 Fifth Ave. So., Minneapolis.

Dr. Leo M. Crafts is the medical director; Dr. Julius Johnson is Dr. Crafts' associate; and Mr. G. B. McDaniels is the superintendent.

Probably the best test of the standing of a professional institution is the character of the men who send their patients to it. Judged by this test the Minnesota Sanitarium stands very high indeed, for the best men in the profession have long sent, and continue to send, patients to it.

IODINE TUBES

Packed in hypodermatic tablet vials, ten of Lilly's Iodine Tubes require very little space. One of these vials will fit nicely into a physician's tablet or syringe case, there is no danger of spilling or leaking, and the tubes are always at hand when the site of a hypodermatic injection is to be sterilized. These tubes hold only a few drops of iodine—just enough for the purpose for which they are intended. Once a physician tries them they become a permanent adjunct to his hypodermatic outfit. To use the physician simply breaks both ends of the sealed tube and applies it to the site of the injection. Lilly's Iodine Tubes are supplied through the drug trade in packages containing five vials of ten tubes each—fifty tubes altogether. Where more iodine is required for painting purposes, Lilly's Ampoules of Iodine will be found very serviceable.

DR. PERCY'S IMPROVED ELECTRIC CAUTERY OUTFIT NO. 2

The treatment of inoperable carcinoma by heat has been more successfully done by Dr. J. F. Percy, of Galesburg, Ill., than by any other man in America or, perhaps, in Europe. Surgeons especially have recognized the efficiency of his methods, which can now be followed by any practitioner.

Dr. Percy's appliance for the use of heat, furnishes, if not the only, certainly the best, means of treating carcinoma that has passed the hope of relief from surgery.

That carcinoma is sometimes cured, very frequently averted, and the patient practically always relieved by this mode of treatment, has been fully demonstrated by Dr. Percy.

Dr. Percy's improved outfit is manufactured by Messrs. Sharp & Smith, of Chicago, and sells for \$30; Dr. Percy has prepared the descriptive circular.

WHAT REMEDIES IN NEURITIS?

In neuritis, is the hot-water bottle the best anodyne? Palliation, by means of externally applied heat, is just as popular today as it was in Hippocrates' time.

The hot bath and the hot-water bottle are wonderful comforters; but who can be continuously in the bath-tub, or who can be forever carrying a hot-water bottle? And how all too soon does the most faithful hot-water bottle lose its ardor and its temperature!

There is no simple adjunct in this category more simple and more genuinely effective than application by the patient himself, if possible along the course of the affected nerve, of K-Y Analgesic, (methyl-salicylate, camphor, and menthol, combined in a non-greasy, water-soluble base).

"K-Y" Analgesic has the obvious advantage over the hot-water bottle in that "it stays put" for a much greater period of time. Nor is there the possible danger of a hot-water bottle burn,—a factor especially to be thought of where the neuritis patient is weak and infirm.

THE BEST GENITO-URINARY ANTISEPTIC

Why Cystogen?

Never in the history of this country has there been such encouragement offered to manufacturers as by the enormous demand for American made products.

We take it for granted that every physician is familiar with the action of hexamethylenamine as a genito-urinary antiseptic, antilithic, and diuretic. Cystogen, aside from being an American product, is a trustworthy, reliable and chemically pure hexamethylenamine that has a record of proven success covering a period of almost a quarter of a century, and has received the favorable endorsement of a very large percentage of the medical profession. As Cystogen is an ideally prepared "non-secret" and is advertised *only* to physicians, the use of it is recommended when one seeks an absolutely pure, effective, and reliable hexamethylenamine. It is ordinarily prescribed in tablet form, the usual dose being one tablet (5 grains) dissolved in a full glass of water, three or four times daily. If the reader desires samples of Cystogen Tablets, Cystogen-Aperient, and Cystogen-Lithia, send in a request to the Cystogen Chemical Co., St. Louis, Mo.

MODERN MARTIAL THERAPY

Amid the veritable swarm of new medicinal agents of all varieties that have been introduced to the therapist during the last twenty years, and in spite of the great advances in general medicine during the same period, there has not as yet been proposed any remedy which can successfully compete with iron in the treatment of anemic and generally devitalized conditions. This metallic element, in one form or another, is still the sheet anchor in such cases, and when intelligently administered in proper form and dosage can be depended upon to bring about marked improvement, provided serious incurable organic disease is not the operative cause of the existing blood impoverishment. The form in which to administer iron is, however, very important. The old, irritant, astringent martial medication has had its day, and properly so. Probably the most generally acceptable of all iron products is Pepto-Mangan (Gude), an organic combination of iron and manganese with assimilable peptones. This preparation is palatable, readily tolerable, promptly absorbable, non-irritant and still distinctly potent as a blood builder and general tonic and reconstructive.

THE LABORATORY OF SURGICAL TECHNIQUE

Three years ago the above-named institution, devoted to surgical instruction and research, was organized in Chicago on an original and seemingly an ideal plan for practicing and perfecting surgical technic. Instead of working by himself in an inadequately equipped laboratory, with but little instruction from his professors, the surgical student is here given every possible opportunity in the way of equipment, animal material, and constant supervision of the work he is doing, to learn how to acquire a perfect technic and to do research work.

Under such a plan, with individual instruction, the medical student or the general practitioner can make rapid progress in surgical technic, and can learn to do a large number of operations in a short time, and can equip himself to begin the work of a surgeon in the proper way.

The routine course covers general abdominal work, hernia, goiter, blood-vessel anastomosis, kidney work, etc.

The course is not a mere short-cut to surgery, but it is the proper way to teach the technic of surgery for which a foundation has been laid in the medical school, in an undergraduate or graduate course.

Doctors from all parts of this country and not a few from South America and abroad have taken the work.

The faculty of the Laboratory is composed of highly capable men.

For full information address The Laboratory of Surgical Technique, 7629 Jeffery Ave., Chicago.

BETHESDA HOSPITAL OF ST. PAUL

Our admiration for the work done by church hospitals is unbounded, especially if the spirit of the Christian Church is never absent from them. Bethesda Hospital of St. Paul is such an institution. It was established nearly forty years ago by the Lutheran Church of Minnesota. It began in an exceedingly modest way in a suburb of St. Paul. Today it occupies

a large four-story building near the heart of the city. It has also a Deaconess Home housed in commodious quarters, and a nurses' training-school, which make possible the large work of the Hospital on the church side of its activities.

Its thirty-seventh annual report shows that the Hospital treated over twenty-six hundred patients last year, and its operative expenses were only a little short of one hundred thousand dollars.

The above are, indeed, interesting facts; but however admirable may be the atmosphere of a hospital, however much its lay management may contribute to the comfort of its patients, or however much these conditions may alleviate the pain and the sorrow that often accompany the patient who enters the Hospital for medical treatment or for a surgical operation, the essential thing is the character of the staff and their work. Upon the last-named point Bethesda need not fear comparison with any other hospital in the Northwest, for its staff is composed of many of the strong men, indeed some of the strongest, of the St. Paul profession; and we believe there is not a weak man on the staff. And this is just as it should be.

Like most other well-conducted hospitals Bethesda has a nurses' training-school and a maternity department, and it also has an infant department; and in the latter Christian charity finds a rich field for service.

Rev. J. A. Krantz is the superintendent.

WORK WITH HOOVER AND SERVE OAT FOODS

To sustain our Allies and our own army abroad it is necessary for this country to ship to Europe 200,000,000 bushels of wheat the coming year in place of a normal shipment of 80,000,000 bushels. That is why Herbert Hoover says we must eliminate waste of bread and must have one "wheatless meal" each day; and yet the domestic housewife must look to the matter of serving nourishing meals. An excellent food to consider as an acceptable, nutritious and easily prepared substitute for bread is oats, either in the form of oatmeal or oatmeal biscuits. As a food that imparts energy and endurance, oats have long been recognized as supreme. And in the form in which they can in these days be procured for table use, they excel nearly every other grain food in flavor and ease of preparation.

Oats have advanced little in price, whereas nearly all other foods have soared. Prices on Quaker Oats, the product of the Quaker Oats Company of Chicago, for example, have advanced, on the smaller package only from 10 cents to 12 cents, and on the large, only from 25 cents to 30 cents. Most other foods, for the same nutrition, cost from twice to ten times as much. Even so simple a diet as bread and milk, for the same nutrition, today costs twice as much as oatmeal. The average mixed diet costs four times as much.

It has been estimated by food experts that oats, to the extent that they are used in place of other foods, on the table, represent a lower cost by 75 per cent, on the average, than what they take the place of.

Per unit of nutrition, bacon and eggs cost five times as much as oatmeal; steak and potatoes cost five times as much; chicken costs six times as much; and the average mixed diet costs four times as much. Oats should be served more often.

THE JOURNAL-~~L~~ANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, OCTOBER 15, 1917

No. 20

THE TRANSVERSE INCISION IN THE UPPER ABDOMEN*

By E. P. QUAIN, M.D., F.A.C.S.
BISMARCK, NORTH DAKOTA

It is a law in operative surgery that we should plan our incisions in such a way as to cause the least possible permanent damage to the anatomic structures that lie between the outside and the seat of the pathological condition. There are times when the surgical lesion is so grave in nature and so deeply situated that injuries along the operative pathway are unavoidable, and must be overlooked and tolerated. But in most of the numerous conditions which require incisions through the abdominal wall, we have sufficient freedom of action to enable us to make such incisions, and, at the same time, leave a minimum of permanent damage.

A careful study of the structures of the abdominal wall tends to show that, as a general thing, we commit greater sins against both its anatomy and its physiology by cutting in a longitudinal than in a transverse direction. An abdominal incision which is longitudinal with respect to the long axis of the body is in reality transverse with respect to those structures which give the chief support, strength, and tone to the abdominal wall. As these structures are severed transversely, it is evident that, unless a perfect approximation, healing, and restitution to normal integrity of all the structures take place, the damage will be permanent. The writer believes that this restitution to normal is impossible after many longitudinal incisions in vogue at the present time.

The organs requiring the most frequent surgical attention within the upper and central ab-

domen, lie more to the right side,—namely, pylorus, duodenum, gall-bladder, and appendix. For purposes of a more ready access to, and a more free exposure of, these organs, it came about that the earlier median incision was placed more and more to the right until finally the so-called right rectus incision became the procedure of choice. In the hands of many operators this manner of opening the abdomen is chosen solely because of its fancied convenience to the operator, and without due consideration of the fact that in every longitudinal transrectal or para-rectal incision irreparable damage may be inflicted on the patient.

All those who have made a number of gall-bladder operations through longitudinal incisions in tense abdominal walls, will remember instances where it seemed impossible to make a satisfactory serosa-to-serosa closure of the peritoneum because of the lateral pull on the so-called posterior sheath of the rectus muscle. Sometimes the suture would cut through the peritoneal margin again and again until there was no hope of making a smooth closure of the frayed-up edges. Finally, a few stitches were probably placed far out into the rectus muscle in a desperate but vain effort to overcome the difficulty and to leave no raw surface facing the viscera. The reason for this is not far to seek. The chief structures giving strength and substance to the abdominal walls, are the external and internal oblique and the transversalis muscles. All these muscles have their origins well out along the external surfaces of the thorax and the abdomen. Their fibers run more or less transversely toward their insertion

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

into their fellows of the opposite side at the linea alba. (Fig. 1.) The tendons of insertion of these three muscles become united near the semilunar line into a broad aponeurosis, which is split into two leaves for the accommodation of the rectus muscle between them. (Fig. 2.) The rectus muscle rests rather loosely on the posterior leaf of the aponeurosis, while, anteriorly, it is more firmly fixed by means of the lineæ transversæ. The rectus muscle has considerable attachment to the anterior leaf of the aponeurosis, not only at the lineæ transversæ, but also by means of numerous fibers between these points, but the attachment posteriorly is of such a loose character that, when the rectus contracts, there is no material pulling effect on either leaf of the

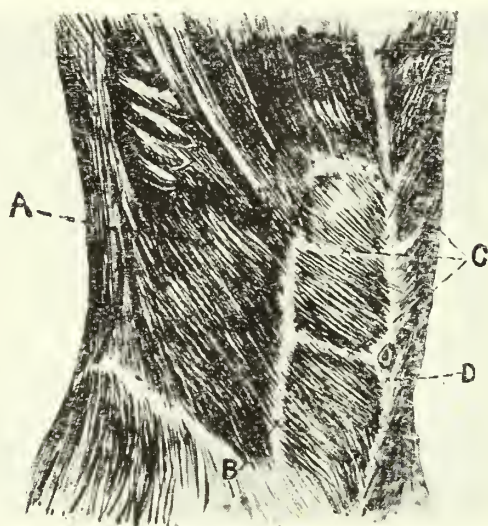


Fig. 1. Outer layer of muscles and fasciæ on the anterior abdominal wall. A. External oblique. B. Linea semilunaris. C. Lineæ transversæ. D. Linea alba.

aponeurosis. The fibers of the aponeuroses run in a general transverse direction, and functionate only when the lateral muscles contract. In view of these facts it is a misnomer to refer to this aponeurosis as the sheath of the rectus muscle. It is a part of the three lateral muscles, and serves to transmit their combined pull at a right angle from the linea alba. When, therefore, an incision is made across these fibers in the upper abdomen, where the peritoneum is very closely attached to the underlying aponeurosis, the peritoneal edges are retracted laterally. The possibility of successfully closing such a wound at all with fine sutures, depends entirely on an unusual toughness of the aponeurosis, or on a general relaxed condition of the abdominal parietes. If, on the other hand, our incision has been so exe-

cuted that the aponeurotic fibers have not been cut across, but merely separated from one another, as is done in the transverse incision, we have no retraction of the peritoneal margins to overcome in the closure. Indeed, in an incision made in this fashion, it is noticed that whenever the patient strains and there is a tightening of the abdominal muscles, the peritoneal gap tends to close up because the separated fibers of the aponeurosis then re-assume their normal parallel side-by-side arrangement.

In the transverse incision we do, however, cut across the rectus muscle in the majority of our operations in the epigastrium. This feature was formerly thought to be a serious drawback to this technic. I am thoroughly convinced at this time

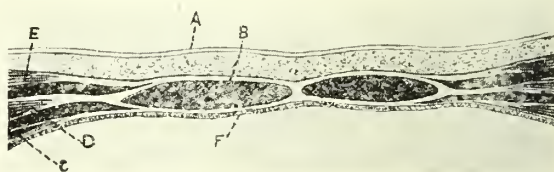


Fig. 2. Transverse section of the abdominal wall below the umbilicus. A. Skin. B. Rectus muscle. C. Transversalis muscle. D. Internal oblique. E. External oblique. F. Transversalis fascia and peritoneum.

that a complete transverse severing of either one or both recti when followed by a fair approximation of the cut ends, can be done safely and without any functional damage whatsoever to the abdominal wall. It is difficult to demonstrate that this muscle exerts any functional influence on the transverse aponeurosis. When a patient with a through-and-through transverse incision across the rectus is straining, it is seen that the cut ends of the rectus are retracted into the aponeurotic tube for a short distance. But, although the rectus has some fibrous attachment on its anterior surface, as already noted, the lateral pull is so much greater that both the anterior and posterior aponeurotic incisions tend to close up whenever there is a general contraction of the abdominal muscles.

A perfect anatomic reconstruction of the cut ends of the rectus would be difficult, for its fibers are associated very loosely. However, this is not at all necessary, for, in the epigastrium at least, the cut ends do not retract far under the aponeurosis, and they are usually coapted sufficiently by a little overlapping of the external aponeurosis.

The ease and permanency of the fascial closures, and especially of the peritoneum, are among the pronounced advantages of the transverse incision. Both Sprengel and Maylard had oppor-

tunities to re-operate on or to perform autopsies on patients who had been operated on by combined transverse and longitudinal incisions a few hours or days previously. Both found that the transverse wounds had held in perfect condition, while in the longitudinal the suture material had torn out, and the peritoneal wounds were gaping or adherent to underlying viscera. This is only what we might expect would follow in any longitudinal incision sutured only with catgut, and followed by distension, vomiting, and straining of the abdominal muscles at right angles with the incision.

But we have other anatomic relations than that of the musculature to consider in this problem. The nerve supply to all structures of the ab-

dominal wall is derived, chiefly if not exclusively, from the intercostals. The intercostal nerves enter the abdominal wall at the costal margin between the internal oblique and the transversalis muscles.

(Fig. 3.) In this space they give off a number of intercommunicating branches forming an almost invisible network from which innumerable filaments are sent mesially to supply the peritoneum as far as the linea alba. The remaining nerve fibers pass on forward toward the linea alba, parallel with the fibers of the aponeurosis, and supply muscles and integument. A longitudinal lateral incision destroys the intercostal nerve supply to all structures lying between the incision and the linea alba. This means a destruction of the tone and function of all muscle structures lying distal to the incision, within this intercostal nerve zone. That this paralysis may become permanent is attested by

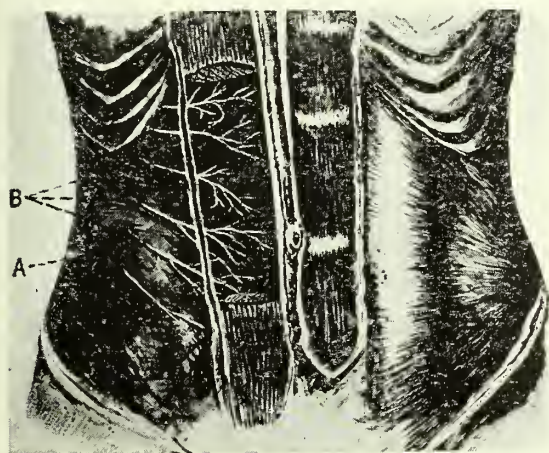


Fig. 3. Segment of the right rectus removed. Intercostal nerves resting on transversalis muscle and fascia. A. Transversalis muscle. B. Intercostal nerves.

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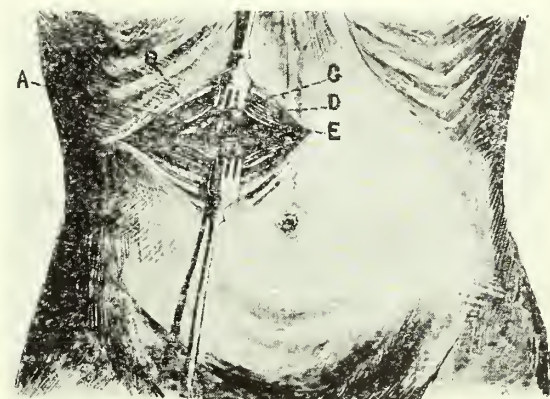


Fig. 4. Transverse incision over the gall-bladder. A. Margin of liver. B. Gall-bladder. C. Anterior aponeurosis. D. Cut end of the rectus muscle. E. Posterior aponeurosis and peritoneum.

in the pathological condition which had made the incision necessary, or in the technic of the intra-abdominal operative work. It seemed more likely that there must be some anatomic cause induced by the manner of incising the abdominal wall. A suspicion became strong that the destruction of the intercostal nerve supply to that part of the peritoneum which lay between the incision and the linea alba, might have a bearing on the condition. For that reason a series of experiments on animals was undertaken in an effort to determine whether the suspicion was well founded or not. The results of these experiments showed that, as a matter of fact, a section of peritoneum lacking normal nerve supply is unable to withstand a degree of trauma or mild infection which on a normally functioning peritoneum would be taken care of and leave no permanent evidence of damage.

Technic.—for exposure of the gall-bladder, ducts, stomach, duodenum, and pancreas, the

most suitable incision is made about two inches above the level of the umbilicus. (Fig. 4.) One or two subcutaneous blood-vessels may need ligating, but more frequently this bleeding is checked without ligatures. The incision is carried down through the aponeurosis from a point near the linea alba and outward to or beyond the linea semilunaris. Only the outer fibers of the rectus muscle are cut across at first. The posterior aponeurosis near the semilunar line is exposed and split. At this point the fibers of the transversalis muscle also are separated and the peritoneum, firmly attached to the transversalis fascia underneath, is opened sufficiently to admit one or two fingers for preliminary exploration. The incision may now be extended to the costal

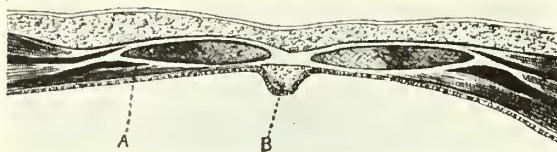


Fig. 5. Section of the abdominal wall above the umbilicus. A. Transversalis muscle attaching directly to the posterior aponeurosis under the rectus muscle. B. Falciform ligament.

margin, and it can be extended across the linea alba and left rectus, and continued to the left costal margin. From the semilunar lines outward, care should be exercised not to injure the nerve trunks which are seen on the transversalis muscle. These nerves supply the rectus muscle and, to some extent, the skin. Slightly to the right of the linea alba, the falciform ligament of the liver is severed. (Fig. 5.) Within this fatty structure will be found a vessel or two which should be ligated at once, both for convenience and to prevent formation of subperitoneal hematoma.

The blood supply is seen to be rich within the rectus, and this promises rapid post-operative repair. Two or three spurting arteries may need ligation near the posterior surface of the muscle. They represent the final distribution of the deep epigastric artery, but there is often a spurting from the upper segment of the muscle, showing that the internal mammary artery also sends branches to this region. (Fig. 6.)

Poirier and Cuneo have demonstrated that in this zone of the epigastrium lies the meeting-place between the lymphatics draining toward the axilla and those draining toward the groin. The incision, therefore, is most conservative with respect to the absorptive mechanism of the abdominal parietes.

The exposure of the organs already mentioned will be found very satisfactory. To one who has become thoroughly accustomed to a longitudinal incision this cross method may seem a little confusing at first. The organs are met with from a different angle than formerly, and they seem for that reason to give to the hand a new and strange sensation, which requires some degree of re-education of the fingers. But after a few experiences, one becomes convinced both of a better exposure and of an easier closure; and, what is still more to be desired, one realizes that less harm is done to the patient than by the former methods.

For cholecystostomy or simply cholecystectomy, it is rarely necessary to cut beyond the

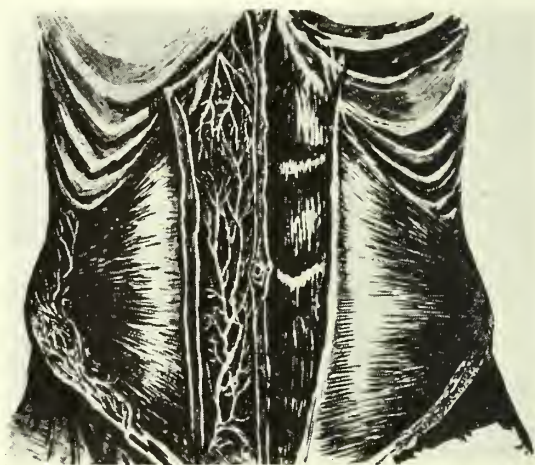


Fig. 6. Right rectus removed, showing the distribution and anastomosis of the deep epigastric and internal mammary arteries, furnishing a good blood supply from both sides of the transverse incision.

linea alba; however, this necessity will arise if the abdominal muscles are very heavy and taut, or if the epigastrium as a whole is narrow. It is far better to enlarge the incision toward the left rectus than to cut across muscle and nerve fibers obliquely along the costal margin.

When the common or hepatic ducts must be opened for drainage or for duodenal anastomosis, the incision is extended sufficiently across the left rectus to give necessary room. The gastro-hepatic ligament containing the ducts runs parallel with the incision and comes easily into view. The same extension across the left rectus is called for in operations upon the stomach. A posterior gastro-enterostomy is done more comfortably through this incision than through a paramedian because the long diameter of the stomach corresponds with the incision and comes

more readily forward. The pylorus likewise is under the incision.

For the excision of ulcers near the cardia through thick abdominal walls, difficulties will be found with any incision. Before any operation on the stomach, it is well to obtain all information possible from a close study of the x-ray plates, both as to the exact position of the lesion and as to the topography of the entire stomach. Sometimes the pylorus or duodenum is kinked up high behind the costal margin, and at other times the whole stomach lies abnormally high. The x-ray, then, may serve as a guide for a specially high transverse incision. If, nevertheless, after a full transverse epigastric incision the exposure is unsatisfactory, it can be enlarged by

gery is needed at both poles of the abdominal cavity, it would very rarely, if ever, be done through one long incision, and a second opening is practically always called for. However, it is possible to elevate the cecum and remove the appendix through a transverse incision over the gall-bladder in very many instances. Naturally, it cannot be done if the appendix is adherent at the brim of the pelvis. When it is necessary to remove such an adherent or, from the upper incision, inaccessible appendix, it is quickly done through a small splitting of the muscles (McBurney fashion), for the relations have already been thoroughly discovered by the hand through the larger incision.

Closure of the wound is done by a running

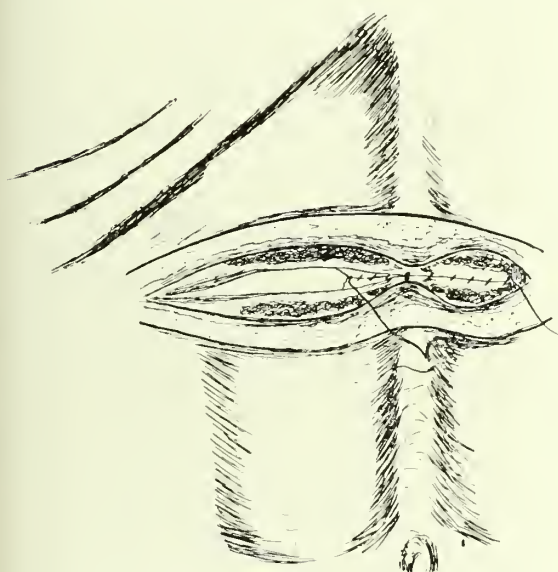


Fig. 7. Closure of the peritoneum, beginning at the left angle of the incision; knot at linea alba; suture continued over the falciform ligament.

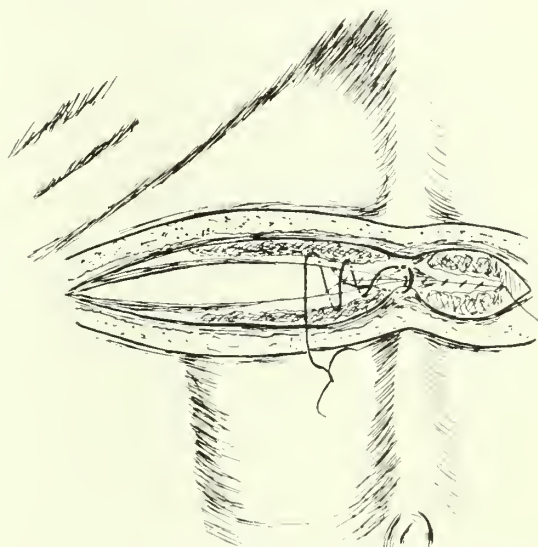


Fig. 8. From the falciform ligament the suture is passed back through the linea alba so as to pull its lower margin under the upper, and cause an overlap. The same continuous suture closes the rest of the peritoneal wound.

a short additional longitudinal incision near the midline. An inch or so of transverse cutting of fibers near the xiphoid cartilage under the falciform ligament is a much lesser evil than a three- or four-inch incision across the aponeuroses near the umbilicus. It should be said in fairness that this longitudinal adjuvant to the transverse incision in the upper epigastrium seemed necessary far more often in the beginning of this practice than it did later. At the present time it is almost entirely of historic interest in our work.

It is, of course, not possible to see and to operate on the pelvic organs through a transverse incision in the epigastrium. But Dr. Moschowitz has called attention to the fact that in case sur-

plain catgut stitching of the posterior, and an interrupted, slightly overlapping chromic catgut suture of the anterior aponeurosis. The loosely hanging cut margins of the peritoneum under the falciform ligament need a little special care. This loose tissue should first be peeled back under the upper edge of the linea alba for one-half inch. The peritoneal suture, having started at the left angle of the incision, is made to gather up the margins of the falciform ligament, and is then passed up through the lower margin of the linea alba, which is pulled up under the already prepared upper flap. From this point the closure continues to completion with an over-and-over stitch. (Figs. 7 and 8.)

If drainage is required, the tube should not be

placed at the costal margin, but, preferably, just inside the semilunar line, in order to prevent symptoms from possible permanent adhesions at the movable liver margin. (Fig. 9.) A large drainage-tube may be left even through the center of the rectus muscle with perfect surgical propriety.

The cut ends of the recti can be approximated separately by a plain catgut suture if they seem to have retracted too far; but, in most incisions, they will be seen to come together very well from the interrupted suture of the external aponeurosis. It is remembered that the anterior surface of the muscle is more or less adherent to the aponeurosis, and by making a small overlapping of the edges the muscle ends are sufficiently ap-

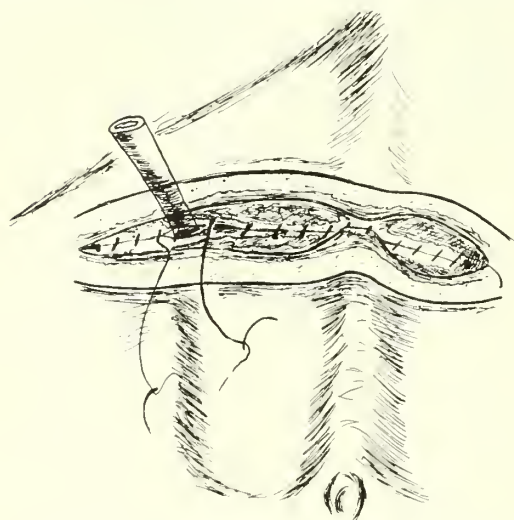


Fig. 9. Drainage-tube placed near the semilunar line.

proximated. At the linea alba it is best to insert a through-and-through silkworm gut to complete and retain a solid overlap of the upper flap. (Figs. 10 and 11.)

It has been my privilege to re-operate through healed transverse incisions on several occasions, and in every instance there has been found a perfect union of both aponeuroses, while the muscle incision has been evident simply from a very thin lamina of white fibrous tissue with normal muscle on both sides. (Fig. 12.) This is of the greatest importance, for the rectus muscle after all is the only structure which has sustained severe injury from the incision, and, as we now know beyond any doubt that this is restored to a condition of functional perfection, the last of the classic superstitions against this method must be considered removed.

It is well known that in most cases, where a prolonged drainage of septic material through a longitudinal abdominal incision is necessary, a hernia will follow sooner or later. My experience with the transverse incision has convinced me—and I may say very much against my preconceived ideas—that hernia is rarely to be feared following drainage of septic gall-bladders and ducts. Observations have taught me that, if the linea alba is left intact or successfully restored, a perfect closure of the rest of the wound is far from being necessary to prevent hernia. This, too, is reasonable, for the transverse muscular action upon the aponeuroses tends to pull the upper and lower edges of the draining sinus together,—not apart, as in the right rectus in-

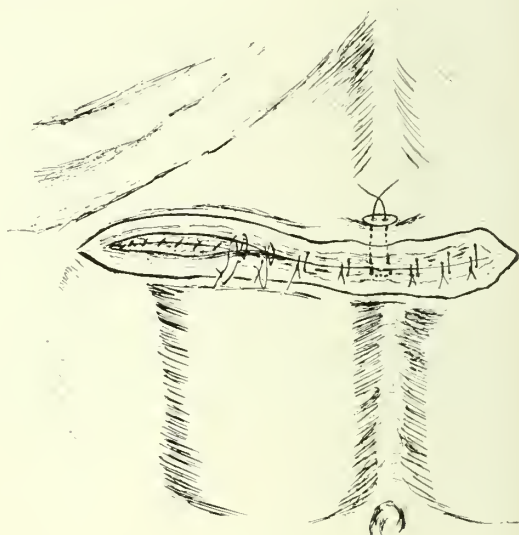


Fig. 10. Interrupted suture of the rectus muscle and the external aponeurosis, making the latter overlap. Silkworm gut through the skin completes the overlap of the linea alba.

cision. We have already seen that the right-angle pull on the part of the rectus is negligible. Post-operative hernia in a right rectus incision, with sepsis and drainage, is aided and abetted by a destruction of the nerve supply and consequent paralysis of a segment of the rectus muscle opposite the wound. There is no such nerve destruction or paralysis in a properly made transverse incision.

Another definite advantage of the transverse incision is the comparative post-operative comfort of the patient. Post-operative pain in a wound is due to the traumatization of nerve filaments and endings. The transverse incision causes irritation only on that intercostal nerve into whose zone the cutting happens to fall. In

a long incision damage is inflicted upon three or four or more intercostal nerves. The proportion of less pain observed in the former would almost suggest this anatomicomathematical explanation.

Langer, some sixty years ago, described the skin "spaltung" or splitting in definite lines and zones for the whole body. He explained that long subcutaneous fibrous connections maintained a constant pulling on the skin in definite directions as seen by the small, almost invisible folds on the integument everywhere. Cutting the skin across these lines will cause a lateral pull on the wound and a wide unsightly scar. If the skin be incised parallel to these lines, there is no tendency to pull apart and the scar becomes narrow and fine. If we study the skin of the abdomen, it

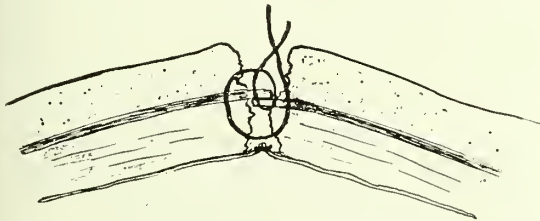


Fig. 11. Diagrammatic drawing showing the method of passing the suture in the rectus muscle and the aponeurosis.

will be found that even for this reason the transverse is the anatomically indicated direction. Consequently, a transverse incision over the gall-bladder will heal with a delicate line, which with time may become almost invisible. The wide, thick, disfiguring scars, which so often follow longitudinal wounds, are not seen.

The experience upon which these arguments are based is drawn from 239 operations on the biliary tract, 34 on the stomach and duodenum, 4 on the right kidney, and 6 explorations of the upper abdomen, all made through transverse epigastric incisions in the manner already described. The appendix was removed through the same incision in slightly over 30 per cent of the patients.

A number of these operations were made in the presence of acute local infection and peritonitis, such as perforated gastric and duodenal ulcer, septic gall-bladder and ducts, and subhepatic abscess.

This presents again the question of drainage and of incomplete closure of the wound, and is a most important test as to possible contra-indication to this technic. We have learned that a wide and prolonged drainage through a longitudinal incision, invites defective closure and hernia. The transverse incision has in no instance shown itself to be contraindicated even in the most septic

conditions, but quite the contrary. Only two patients have returned with any evidence of post-operative hernia. A definite protrusion followed in the case of a septic cholangitis in which a large segment of aponeurosis sloughed away from the abdominal wall. This was one of the earliest operations made through a transverse incision. Later observations with similar pathology have demonstrated that the fascial infection and necrosis, undoubtedly, was induced by an unnecessary and unsurgical tight-suturing of infected tissues around the drainage-tubes. The second case was a less pronounced bulging of the scar. This was a common-duct obstruction with chronic jaundice. A secondary hemorrhage necessitated a reopening and packing of the wound, which

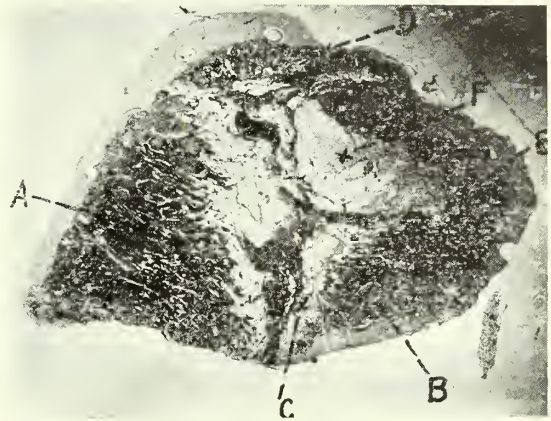


Fig. 12. Microphotograph of cicatrix in the rectus muscle, removed ten months after transverse incision. A. Upper margin of the rectus muscle. B. Lower margin of the rectus muscle. C. Lamina of fibrous tissue, representing the line of union between the cut ends of the muscle. D. Segment of upper margin of the anterior aponeurosis firmly united to the lower margin. E. F. Fibrous tissue at the place of the aponeurotic union.

originally had been made very large with a vertical extension along the linea alba. The chief bulging was at this longitudinal branch of the incision.

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THE TUBERCULOSIS PROBLEM IN MINNESOTA*

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Is there a tuberculosis problem in Minnesota? If so, what are its phases? We must answer the first question in the affirmative, and then answer the second by admitting two phases: first, a public-health problem; second, an economic problem.

The economic problem is one that should appeal to everyone, for it involves, on a conservative estimate, a direct loss of over ten millions dollars to Minnesota annually. This loss relates only to the tuberculous victims who die. There is an indirect loss through the bearings this disease has upon dependents, changing their future wage-earning power, and also reducing their physical resistance and ability. This would add materially to the direct loss already given.

These things we cannot discuss today. Our attention will be given to the public-health problem only.

Tuberculosis is recognized as a communicable disease, a preventable disease. If preventable, why not prevented? The only answer to this must be either because of ignorance or indifference. We cannot now plead ignorance; we must, therefore, admit indifference.

There is a general sentiment at present that the infection from tuberculosis occurs largely in infancy. This sentiment has been dwelt upon so generally as almost to convey the idea that the infection occurs only in infancy. It appears to me that this infection in childhood has been over-emphasized of late. To be infected, a child must, according to modern views, live under exposure to tuberculosis for some time. The danger to the child must be from cow's milk or from living in a house where there is an open case of tuberculosis. From statistics we know that but a small portion of children having tuberculosis are infected from cow's milk. Truly, there are many children in Minnesota who are neither infected from cow's milk, nor are they living in homes where there are open cases of tuberculosis. It seems to me the statistics upon which this theory of the infection of everyone during infancy is based are not altogether reliable. They are, as a rule, based on the post-mortem findings on hospital cases. These statistics do not apply to the well-to-do of urban life, and certainly do not apply to the people living from birth in rural districts.

There is another important point which we might consider now, namely, if an infant has been exposed to infection from the mother or others before the fact is discovered, must we assume that the infection has taken place and that it is too late to introduce protective measures for this child? I for one am not willing to accept such a conclusion. While a single short exposure may be enough to infect the child, I cannot feel that health authorities would be justified in doing nothing for the future protection of the child upon finding that it had already been living for a time with an infectious mother.

Recognizing the danger of infection in infancy, it is most important that everything should be done to prevent the infection of the child. In New York City at the present time certain babies are taken from their tuberculous mothers immediately following birth, and are cared for at the preventorium for a considerable length of time. There is no reason why such an infant should not grow into advanced life without showing any evidences of infection from the mother. This method of treating the child of the tuberculous mother is ideal. Unfortunately, it cannot be adopted in every instance.

If we accept the possibility of infection for the adult as well as for the child, and recognize the open case of tuberculosis in the home as the chief source of infection, it seems to me we have a very definite public-health problem before us, namely, the care of the open case of tuberculosis in such a way as to prevent the infection of others. But while the problem is definite it is also difficult.

The home care of diphtheria, of scarlet fever, and of typhoid fever, is illogical, for we place the well members in quarantine with the sick, thus practically insuring the infection of all susceptible members of the household. If we wish to avoid secondary cases of these diseases we should, instead of quarantining the case at home, remove it at once to a properly equipped hospital, watch for the appearance of any other cases in the same household, and remove them promptly if they occur. In this way the disease would be promptly brought under control, not only so far as relates to the household, but also to the community.

Although we recognize tuberculosis as belonging to the same group of infectious diseases as

*Read before the Southern Minnesota Medical Association, July 23, 1917.

diphtheria and typhoid fever, we do not try to control it by quarantining the family, for we know this would accomplish nothing. We know that the open case is the source of danger. We know that the open case cannot be quarantined for a period covering months, or even years. Fortunately, we know that the open case is not always a source of danger in the home, for if proper precautions are taken there is no question whatever but that the patient may live at home without endangering others. The public-health

Minnesota has made some very interesting tuberculosis surveys. None of these were completed, however, for none of them have found all of the cases in any one county, the survey having been based primarily upon possible exposure only to those who have died within a recent period within the district surveyed. These incomplete surveys have demonstrated many sources of possible danger. What has been the outcome of these surveys? Practically nothing. They were made largely to demonstrate the need of the

TABLE I
Time of Patients' Residence Before Discharge

Institution Number	Capacity	Year	Days							Months					Years 1 or more	Summary				Total
			4 or less	5 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	2 to 3	3 to 4	4 to 5	5 to 6	6 to 12		Months			Deaths	
																1	2	rest		
HOPEFUL CASES																				
1.....	236 236	1915 1916	16 14	6 8	13 17	16 11	14 18	15 13	13 19	22 47	28 33	20 31	23 28	39 73	14 3	51 50	42 50	146 215	15 34	254 349
10.....	22	1915 1916	No R 2	ecord 1	2	3	0	3	1	0	2	0	3	7	0	8	4	12	1	25
PRIVATE INSTITUTIONS																				
7.....	50 50	1915 1916	0 2	4 3	4 5	6 7	6 7	2 8	4 1	18 16	11 15	5 7	7 5	10 7	2 0	14 17	12 16	53 50	8 10	87 93
ADVANCED CASES																				
5.....	102 102	1915 1916	5 5	3 13	8 10	6 9	6 4	5 10	5 11	8 17	13 12	13 11	5 11	16 26	9 5	22 37	16 25	64 82	106 121	208 265
4.....	110 120	1915 1916	21 9	12 13	22 21	20 12	20 13	10 14	9 7	29 16	24 18	14 7	9 7	20 18	0 1	75 43	39 34	96 67	97 116	307 260
6.....	56 56	1915 1916	5 6	7 7	12 12	7 8	7 7	8 6	6 8	8 11	12 10	9 8	8 4	8 6	1 3	31 33	21 21	46 42	65 121	163 217
11.....	24	1915 1916	No R 5	ecord 3	5	7	6	2	1	3	5	5	0	5	4	20	9	22	26	77
COUNTY SANATORIA																				
2.....	99 135	1915 1916	0 2	0 4	4 5	5 6	5 9	1 6	0 4	4 7	2 13	5 9	2 2	10 36	5 3	9 17	6 19	28 70	15 60	58 166
3.....	24 35	1915 1916	5 1	6 2	2 1	3 2	4 1	0 1	5 0	5 3	4 2	1 2	1 0	5 8	0 2	16 6	9 2	16 17	4 20	45 45
9.....	28	1915 1916	No R 1	ecord 2	; not 2	open 2	3	3	1	3	2	4	2	3	0	7	7	14	15	43
8.....	50	1915 1916	No R 2	ecord 5	; not 2	open. 3	4	3	4	16	16	5	7	4	0	12	11	48	26	97

problem, therefore, in dealing with this disease, is not to establish an unreasonable home quarantine of each case, but (1) to investigate every case in order to determine whether it is a source of danger in the home, and (2) to keep every closed case under observation in order to know at once if such a case changes to an open case. This work calls for a thorough health system for the entire state, with the visiting nurse as a part of the system.

county sanatoria. All of the surveys were made in counties where there was no county sanatorium, and none of the counties surveyed has as yet a county sanatorium. The argument used in the various counties when the surveys were made was, "Provide a sanatorium for your dangerous tuberculous cases, and stop the infection of your citizens."

These surveys, with the exception of that of Rice County, were all made after the passage

of the law, in 1913, providing state aid for county sanatoria.

At this point a word may be said relative to this law providing State aid. Why was it passed? The chief argument put up to the Legislature was, to care for the dangerous consumptive and to aid in the control of the disease. Although the administration of this law was to be in the hands of a state board other than the State Board of Health, yet the State Board of Health was very active in securing the passage of the law.

derstand thoroughly that if they meet certain requirements they can receive state aid.

Recognizing that the law providing state aid was passed largely through the efforts of the State Board of Health, to be used as a part in the control of tuberculosis under the administration of the Advisory Commission, we may well ask, What is the outcome four years after the passage of the bill? Six sanatoria were built and put into operation before January 1, 1917. One county sanatorium had been previously built, and

TABLE II
Time of Patients' Residence Before Death

Institution Number	Capacity	Year	Days							Months					Years	Summary			Total
			4 or less	5 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	2 to 3	3 to 4	4 to 5	5 to 6	6 to 12		Months			
																1	2	rest	
1.....	236 236	1915 1916	1 0	2 0	0 1	5 1	0 1	1 4	0 4	2 2	1 4	2 4	0 2	1 7	0 4	8 2	1 9	6 23	15 34
10.....	22	1915 1916	No R 0	ecord 0	0	0	0	0	1	0	0	0	0	0	0		1		1
7.....	50 50	1915 1916	0 1	0 0	2 0	0 0	0 1	1 0	2 0	1 3	1 3	0 1	0 0	1 1	0 0	2 1	3 1	2 8	8 10
5.....	102 102	1915 1916	6 8	10 9	11 9	10 16	8 12	13 7	4 7	8 14	9 9	10 4	2 3	11 14	4 9	37 42	25 26	44 53	106 121
6.....	56 56	1915 1916	7 0	4 9	10 6	6 3	4 5	4 4	4 8	8 5	6 8	3 4	1 3	6 5	2 0	27 18	12 17	26 25	65 60
11.....	24	1915 1916	No R 3	ecord 2	4	0	1	2	0	4	2	2	1	1	3	9	3	13	25
2.....	99 135	1915 1916	1 0	1 1	0 3	1 1	1 6	1 1	2 1	1 8	2 5	0 4	0 11	4 15	1 4	3 5	4 8	8 47	15 60
3.....	24 35	1915 1916	1 1	0 3	0 4	0 1	0 2	0 1	0 0	0 1	2 2	1 2	0 1	0 0	0 1	1 9	0 3	3 7	4 19
9.....	28	1915 1916	No R 0	ecord 2	; not 1	open 0	0	1	0	2	3	0	0	6	0	3	1	11	15
8.....	50	1915 1916	No R 3	ecord 1	; not 4	open 1	3	1	2	6	2	1	2	0		9	6	11	26
4.....	110 120	1915 1916	21 9	12 13	22 21	20 12	20 13	10 14	9 7	29 16	24 18	14 7	9 7	20 19		75 55	39 34	96 67	210 156

In fact, said Board, through a commission of its appointing, had the bill prepared and put it through. The law is far from ideal, but any effort by the State Board of Health to secure any change would, without doubt, be taken as antagonistic to the Advisory Commission, and would in all probability be opposed by the Advisory Commission and its friends.

More ideal legislation would have been to have given the county sanatorium commission provided for by law in 1909 state aid on condition that their institution was built and operated along fixed standards. The parallel for such procedure exists in the granting of state aid to the public schools. The schools are governed by local boards of education, and such boards un-

derstand thoroughly that if they meet certain requirements they can receive state aid. One municipal institution had been built without any idea of state aid. Two philanthropic institutions had been built without state aid. One county institution, belonging rather to the hospital than the sanatorium type of building, and one private sanatorium had also been built, this making a list of thirteen institutions that had been open one year or more prior to January 1, 1917.

On January 1, 1917, there were 854 beds in Minnesota for the care of the tuberculous, with about 829 residents on this same date. The record of these institutions is shown in the accompanying tables.

We may well be satisfied with some of these showings. It is fortunate that 950 patients who died in these institutions during the year had been provided with a comfortable place in which to die. True, as shown by the table covering deaths in institutions, some were evidently not removed from their homes or lodging-places as a part of the control of the disease; otherwise they would have found their way to these insti-

facts are known as to some of them, but not as to all.

Are those having control of these sanatoria in sympathy with the public-health side of the question? We do not know as to all, but Dr. H. L. Taylor, president of the Advisory Commission, has publicly stated that these institutions are for the care of the patient rather than for the control of the disease. Similar views have been ex-

TABLE III
CONDITION OF PATIENTS AT TIME OF DISCHARGE

Institution Number	Capacity	Year	Disease				Sputum	
			Apparently Arrested	Quiescent	Improved	Unimproved	Open	Closed
HOPEFUL CASES								
1.....	236 236	1915 1916	17 16	39 65	39 127	131 116	70 232	19 126
10.....	22	1915 1916	No Record 7	2	5	11	18	6
PRIVATE INSTITUTIONS								
7.....	50	1915 1916	9 3	13 8	43 42	12 30	82 51	26 23
ADVANCED CASES								
5.....	102 102	1915- (14 mo.) 1916	12 2	2 19	70 68	33 46	No Record 73	56
4.....	110 120	1915 1916	9 (?) 0	1 (?) 0	0 112	268 45	No Record 113	42
6.....	56 56	1915 1916	23 4	1 0	47 46	35 46	84 70	26 27
11.....	24	1915 1916	No Record 0	3	11	7	42	5
COUNTY SANATORIA								
2.....	99 135	1915 1916	6 22	1 5	29 48	10 26	10 49	17 31
3.....	24 35	1915 1916	? 4	3 2	11 2	21 17	21 18	4 7
9.....	28	1915 1916	No Record; 2	not open 3	8	16	42	5
8.....	50	1915 1916	No Record; 1	not open 9	30	11	21	35

tutions long before they did. It will be noted that of the 950 who died in these institutions, 65 had residence of less than ten days, while 88 had residence of eleven to thirty days. These individuals must have had opportunity to infect many others before they were removed to the institution.

During the same time in which 950 tuberculous patients died in these institutions, 996 open cases were discharged. What became of these 996 open cases? Are they endangering others? The

pressed by superintendents of certain of these sanatoria.

If this is to be recognized as the attitude of sanatoria men, the State Board of Health work in securing the passage of the state aid law is practically of no avail. After the passage of the state aid law in 1913, the State Board of Health, through its Division of Preventable Diseases, investigated cases of tuberculosis when we were requested so to do. If a case thus investigated was found to be an open case and liable to in-

fect others, the local board of health was advised as to its duties under the general law (General Statutes 1913, Sections 4646, 4647 and 4648). It was advised that the patient must be so cared for as not to endanger others. Where the patient was in a county with a sanatorium, the health authorities were advised to see that the patient was sent to this institution if he or she could not be properly cared for at home. The burden of expense for such a patient fell then upon the county and the state. In counties where there was no sanatorium, the problem was quite different. They can receive no benefit from the state aid law even though they send a patient to a county sanatorium. The general law in dealing with communicable diseases places the expense primarily upon the township, the village or the city, these being able, in dealing with the poor, to recover half the expense involved in the control of the disease from the county. This means a burdensome expense upon a township in caring for a tuberculous patient in such a way as not to endanger others. So far as the county is concerned there is no difference, practically, between its liability under the general law (one-half of the expense) and under the special county sanatorium law (practically one-half the expense).

In dealing with cases in a county, we used them as a lesson, pointing to the importance of a county sanatorium, showing the people that without such an institution they were paying their portion of the state tax, giving to certain institutions and receiving no benefit therefrom; showing the county commissioners that the county had to pay its share with or without a county sanatorium, and that by providing the sanatorium they were transferring the burden of expense which the county was not paying from the township or village to the state, thus relieving the township and the village in some instances of a heavy burden. This argument, if well supported, would have been a strong one in favor of the county sanatorium.

In dealing with individual cases, town boards of supervisors (which are, *ex officio*, boards of health) were told that the patients could be taken care of more satisfactorily and more cheaply in a sanatorium than at home. In counties with no sanatoria we advised the town boards to make a contract with counties having sanatoria to care for their tuberculous cases; furnished them with a form of contract; and advised them that they must do this, otherwise the State Board of Health

would do it at their expense, as provided for under the law. This system went on for a time, but we soon found that after having placed the township and the state at considerable expense in sending these patients to a sanatorium, many of them remained but a few days and then returned to their homes, to live under the same conditions as those which existed previous to our orders. This brought down criticism upon the State Board of Health, and upon the township officials, the local doctor and others. It can readily be understood that the State Board of Health soon dropped this method of procedure. It accomplished nothing.

The condition, then, as to these cases is the same today as it was before the state aid county sanatorium law went into effect. We know that these cases cannot be properly cared for at home without the constant supervision, at least in some cases, of a nurse, and we do not feel that the law or the conditions justify us in demanding such services through the township. We know that it is impossible to house and care for the nurse in many of the homes where these dangerous tuberculous persons live.

It has been said that the State Board of Health is trying to make these county sanatoria serve as custodial institutions, and that, if this attitude is taken, the usefulness of the institution is gone, for people would not voluntarily go to such a place. This is a misstatement of facts. Health authorities have absolute control of patients ill with a communicable disease. The home is a custodial institution when we are dealing with diphtheria, scarlet fever, etc. It would not be hard for health authorities to convince tuberculous patients that they must do the right thing, if the State Board of Health had the county sanatorium working in harmony with it on these matters.

Again, it has been said that I am not a suitable one for the position which I now hold because I want to send every open case of tuberculosis to a sanatorium and keep him there for the rest of his life. It should go without saying that this is not true. I maintain, however, that every case of tuberculosis should be under public-health supervision, and that every tuberculous patient should meet all the reasonable public-health requirements, either at home or in an institution.

There is a special group of tuberculous patients that requires special attention, namely, the incorrigible. It has been stated that I want to force sanatoria to care for these. By no means. I recognize the demoralizing influence of the in-

corrigible in any institution. Minnesota needs a hospital for incorrigible tuberculous patients. It may well be located on the grounds of the State Prison at Stillwater. It should not be considered a part of the prison, although under prison rules. The law should provide for the commitment of a patient to such an institution. The cost of such an institution would not be great, for, naturally, it would be a small affair, because, if patients were told that they would have to obey directions or be sent to this institution, most of them would obey directions. The cost of maintenance of such a hospital would not be great, for the prison guards could easily see that the patients did not escape. The prison could also furnish these individuals food, medical care, and, when necessary, nursing. Such a hospital would be of great service, not only to public-health officials throughout the state in the control of these incorrigibles, but to the sanatoria in the enforcement of discipline. If I am rightly informed, there is now a custom of discharging unruly patients from these institutions. I do not think that discharge should ever be a part of the discipline of such a place. Turning over to a hospital for incorrigibles would take the place of the present methods of the discharge of these individuals.

After these preliminary statements, we may ask, What is the situation in Minnesota at present? From the public-health standpoint it is practically the same as it was before the passage of the state aid law for county sanatoria in 1913. Expensive sanatoria have been and are being built for the care, according to Dr. Taylor and others, of certain patients who go to these institutions. Is the control of tuberculosis or the reduction in the number of cases to be brought about by such procedure? I think not.

Let us give a little attention to the question of care or control of patients in these institutions. There are three types of sanatoria for the tuberculous:

1. The private institution.
2. The sanatorium for the early case only.
3. The general sanatorium.

The private institution is undoubtedly for the care of the patient only. The physician operating such an institution knows that he can take care of his tuberculous patients better at an institution than in the home, and he persuades them to go to his institution for that reason. The sanatorium for the early case only may be considered a part of the care of the patient. These institu-

tions, if they are handling the cases intended only for them, are dealing with those who are but slightly if at all dangerous to others, and are treating their patients with the idea, not of preventing the infection of others, but of giving them an opportunity to recover from their disease. The general sanatorium, that is, the county sanatorium, or others of similar type, is for both the care of the patient and the control of the disease, and it is the latter in which health officials are especially interested.

Health officials are interested in the patients from the first and second groups of sanatoria only after they have left the institution. It should be noted of those leaving institutions of the first group, when they return home, as to whether they are endangering others. If so, then they would come under the control of public-health authorities. Those returning from institutions of the second group are to be kept under observation after their return home, in order to note whether they remain improved or cured, or whether they fail to hold their own and become open cases.

If county sanatoria are for the care of the patient only, and are to have no part in the control of the disease, then they are hospitals, and should not be receiving state aid. The hospitalization of the sick is a very different problem from the special care of a group of patients as a part of the control of a disease. Patients who are able should pay their own hospital expenses. Patients who are poor and need hospital care should be provided for under the poor law.

There is one other point which I wish to dwell upon in relation to these sanatoria, namely, that they are a part, not only of the treatment of the patient, but of the retention of the patient, and to retain a patient in an institution there must be a general spirit of contentment on the part of the patients. This requires good housing, good food, good entertainment—in other words, good hospitality. I presume it will not be considered presumptuous on my part to express my belief that every one of these institutions should be in charge of a resident physician, and by "resident physician" I mean one who is constantly on duty at the institution, and that a large part of his duties is to secure the contentment of the patient. We should not feel that the chief function of the medical superintendent of these institutions is the physical examination and the therapeutic dosing of the patient. Contentment on the part of the patient is most important.

One more point before closing, namely, the use of unauthorized therapeutic agents in the treatment of the tuberculous. The State Board of Health has nothing to do with the control of quackery or the use of therapeutic agents by the private practitioner. It has a duty, however, when it comes to dealing with such agents as the part of the control of communicable diseases. When the notorious Friedman serum was foisted upon the people, certain State Boards of Health took action forbidding its use. The Minnesota State Board of Health was ready to act, but never did so because, as far as it knew, there was no general attempt made to exploit this remedy in Minnesota.

A product of questionable value, however, has been used to some extent in private practice in Minnesota. A movement was set on foot to start a children's clinic in one of our Minnesota cities where the use of this product was to have been one of the chief features. Because of this possibility, the State Board of Health, under date of October 12, 1915, passed a resolution reading as follows:

No virus, serum, toxin, or analogous product shall be used in Minnesota for therapeutic purposes, the efficacy of which has been disapproved by the United States Public Health Service.

The use of this questionable product, after the passage of this regulation, became illegal on December 2, 1915. That is, on the date of the final legal publication of the regulation.

In the *Saint Paul Medical Journal* of December, 1916, appeared an article entitled "The Prevention and Treatment of Tuberculosis," in which the author stated that every child entering the Ramsey County Preventorium since July, 1915, to the date of his article referred to, had been given two doses of this product. The giving of every dose after December 2, 1915, was an illegal act.

The question as to the standing of this product had been carefully looked into by the State Board of Health both before it passed the regulation referred to above and after the publication of the article referred to above. The article referred to criticised the action of the United

States Public Health Service in relation to its investigation of this product. It is not necessary to enter into arguments in defense of said Service at this time. The article presented views coming from a laboratory in England as supporting the contention that the United States Public Health Service had not been fair in its investigation of this product, and that the product was worthy of consideration. The man at the head of the English laboratory, in a letter to me dated January 18, 1917, states among other things:

I myself do not think that this vaccine has any special claim on our attention or thought. Both from the theoretical and practical point of view, I would much prefer, and as a matter of fact we always use, the much simpler and less sophisticated vaccine produced by the ground-up tubercle bacillus. I personally do not think that Dr. ——— has substantiated a claim to have in any way improved upon the process of immunization against tuberculosis.

Yet this is the product that has been used, according to the author of the paper published in the *Saint Paul Medical Journal*, in the Ramsey County Preventorium, on every child entering that institution since July, 1915.

Speaking about this product with a scientist in Washington last spring, he said, "At best this vaccine can be considered as only in the experimental stage, and it is not necessary for us to use children in our experimental studies so long as we have plenty of mice, guinea-pigs and monkeys."

I have thus reviewed the tuberculosis situation in Minnesota. From a public-health point of view it is most disappointing, for it was to be hoped, first, when the law of 1909 was passed, that counties would become active in trying to care for their own tuberculous, and this hope was still stronger when the law of 1913 providing state aid was passed, for it was the hope of health officials that the people would insist on protecting themselves from infection, and that the counties would see the advantage of removing the burden of expense from the small municipality and the township, transferring such expense to the State. It remains to be seen what the future of this work is to be in Minnesota.

RÖNTGENOLOGY IN MEDICINE AND SURGERY*

By N. J. NESSA, M.D.

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Röntgenology in medicine and surgery today has assumed a very important and scientific rôle, sufficiently so to justify at least any effort made to familiarize our colleagues with the possibilities of this diagnostic and therapeutic agent. The domain of medical science has become so extensive that it is quite impossible for any individual to keep abreast with the advance of progress in more than a few of the special lines in which one's interest centers. It is, therefore, quite opportune, I am sure, for any one who incorporates röntgenology in his daily practice, and who should be of considerable aid in disseminating knowledge of the Röntgen ray methods, to attempt, at least, to illucidate its clinical applications among his fellow practitioners.

The Röntgen ray, named after its discoverer, Professor William Röntgen, of the Royal University of Wurzburg, was officially communicated to the scientific world in December, 1895. It was an accidental discovery on his part; and, not knowing the nature of the ray, he called it *x*-ray. However, the American Society of Röntgenologists, I am informed, have since agreed that it shall be known as the Röntgen ray.

During the short time since its discovery a great deal has been learned in regard to the ray; and it is now not a bold fancy to predict greater things in the future for it than have already been accomplished.

Many of our greatest discoveries and inventions have, during their time, extracted a toll of sacrifice, even in lives, of the early workers in their fields, only to more benefit human life in the end; and among these we find the Röntgen ray not wanting, as many of the early workers in röntgenology unduly exposed themselves daily to the ray, which finally resulted in excessive burns, malignancy, and death; and it is only during later years that much has been known as to proper protection from these bad results.

The early work in röntgenology was confined to making examinations and diagnosis; and it was the occurrence of the deleterious results above spoken of, namely, Röntgen burns following undue and repeated exposures in making these examinations, that first gave the intimation that, if a medium was capable of producing such

destructive process in healthy tissues, it might be possessed of considerable power as an alterative agent on pathological tissue, which, as you know, has proven itself correct in many particulars, until now a vast field of pathological changes for Röntgen therapy has developed.

In considering the Röntgen ray from a diagnostic standpoint, you are all more or less familiar with its application to the study of bone and joint abnormalities, such as fractures, dislocations, sarcoma, tuberculosis, osteomyelitis, etc., as well as the localization of foreign bodies, as bullets and fragments of metal. Lately, the study of the nose and accessory sinuses, cranial irregularities, unerupted and infected dental roots, have become much in evidence. The modern apparatus of today has the stereoscopic feature for radiograms, which gives an exact picture as to displacement of fractured bones or the lodgment of foreign bodies, which is a very unique and positive means of establishing anatomical relationship of these conditions.

Röntgenograms, as you all know, are produced by the action of the ray on sensitive photographic plates, the ray having the same action on the silver emulsion as has sunlight, thereby producing certain shadows on the plate, which correlate with the density of the different tissues that the ray passes through. Thus we see that the interpretation of these shadows becomes the real important feature of the examination; also, that it really requires a mind of medical training, as well as of practical experience, fully to comprehend and translate these shadows. This requirement applies to fluoroscopy, as well, because it is impossible to detect abnormalities if the normal conditions are not known and recognized.

Stereoscopic examination of röntgenograms, as above noted, is a great improvement over the old method, as it gives the third dimension, or depth, and wonderfully facilitates a correct diagnosis when properly used and applied.

Gastro-enterology has of late made great strides in diagnosis, thanks to the efficiency of the Röntgen ray. Some of our large clinics place more confidence on gastro-intestinal diagnosis made by their röntgenologists than by all their other methods combined, which is stating a great deal when it is recalled that this agent has been used in this field for only a few years.

*Read at the 36th annual meeting of the South Dakota State Medical Association at Yankton, May 29 and 30, 1917.

The technic of examining is comparatively simple; and the gratification of seeing with your own eyes the positive evidence of pathology, I believe, is one of the greater satisfactions that comes to the practical Röntgen observer.

Pulmonary study and diagnosis is also a very interesting and satisfactory Röntgen observation, as well as in cases of cardiac diseases. The older physical methods of diagnosis become somewhat obsolete when one can have the privilege of having his patient stand up in front of the fluoroscope, and can thus see with his own eyes, for instance, shadows which indicate the fluid, if present, pleural and pericardial adhesions, pulmonary areas of consolidation or rarefaction, cardiac enlargements, presence of aortic aneurysms, etc.

During the last few years a considerable amount of investigation and study has been directed upon observation of respiratory movements of the heart and diaphragm. I refer in particular to orthodiagraphy or the fluoroscopic tracing of the heart outline and the various measurements thus obtained, and then compared with those of the normal heart as compiled by Grödel. This gives one an accurate heart-picture, easily showing what are termed aortic and mitral hearts, when present, the former a left-sided and the latter a right-sided enlargement. If you agree with me that cardiac percussion is possibly only to a gifted few, you will readily appreciate this easy method of study.

While speaking of percussion as a means of outlining organs, it is interesting to note how frequently an unsuspected stomach (by that I mean a stomach normally percussed above the navel) is found nestling in the bottom of the pelvis with the duodenal cap behind the navel, when examined by the fluoroscope.

Lately a new Röntgen tube has been devised by Professor Coolidge, of the General Electric Company, which is a wonderful improvement to röntgenology. This tube permits a regulation of its vacuum, thereby establishing a means of working with a known or desired quantity of Röntgen ray for considerable periods of time; and this has led on rapidly to new fields of diagnostic, as well as therapeutic, work, in the latter of which it fills its greatest usefulness.

As stated above, it was the deleterious results from over-exposure on healthy tissues that led to the idea of destroying pathological tissue with this same agent.

In dermatological work, commencing the use of the ray as a depilatory, and as a stimulant in the treatment of acne and eczema, it was not long before it was discovered that profound effects could be produced upon superficial lesions. Following this, experiments were soon made in treating goiter, lymphatic leukemia, and tuberculous glands, as well as the skin malignancies, which has, in its turn, as previously stated, led on and on until within late years the numerous new fields have been entered and successfully managed by using heavy penetrating doses with plenty of filter, as in treating the deeper lesions, like uterine fibroids and metastatic malignancy. Thus we see that a wide range of activity has been demonstrated to be possessed by this agent, possibly explaining one reason why some physicians fail to understand why an agent can have such intense action in the different tissues at variable situations at the same time. This is explained by the fact that only tissues which will absorb the ray will manifest a physiological reaction. An experiment illustrating this fact has been demonstrated by treating a sarcoma of the neck with deeply penetrating rays and producing a dermatitis on the opposite side. This variable penetration of the ray in order to effect beneficial tissue-changes, requires elastic tubes, and these changes, as above stated, are at the present time best accomplished by the use of the Coolidge tube.

We have been recently informed that as wonderful an improvement as was the Coolidge tube over the old style gas tube, is soon to be looked for in the new Coolidge tube, which will be small in size, tubular in shape, light in weight, and capable of delivering enormous radiation. These data have been recently furnished by Professor Coolidge himself, and lend hope of greater possibilities for this wonderful adjunct to medical science.

The reason why certain reactions take place in certain tissue when exposed to Röntgen rays is not known or understood, as, for instance, in treating cases of thyrotoxicosis, all we know is, that the ray tends to bring the gland back to normal. In other words, there is toxic material present which is evidently thrown out into the circulation and made manifest by certain well-known clinical signs; but it is usually observed that after a certain amount of exposure to the ray these same symptoms will disappear.

The whole truth of the matter has been very clearly summed up by Dr. Johnston, of Pittsburgh, whom I quote as follows:

Normal human tissues in health are possessed of a certain degree of vitality. They react to various stimuli, electrical, chemical, or mechanical, in a uniform degree. Healthy tissue possesses a certain degree of physiologic resistance to irritating or destructive stimuli. It is also possessed of certain well-marked reparative powers when injured. Diseased tissue, on the contrary, is in an entirely different condition. If malignancy, for example, be present, the tissue is composed of rapidly growing cells with changed structural relations, blood supply of hasty construction, and tissues growing physiologic variations multiplying rapidly with small powers of resistance and slight reparative power. If such tissue be subjected to quantities of radiation correctly prescribed and administered, it will undergo tissue death either slowly or en masse according to the degree of rapidity with which the dose has been administered. Small doses of radiation, or radiation of so high a penetration that but little is absorbed, may, on the contrary, only stimulate and irritate such a lesion, and, instead of producing beneficial results, is prone to be followed by exacerbation of the growth. Relatively enormous doses are sometimes necessary, and the physician who desires to employ radiotherapy should have the ability to recognize the necessity of such doses and the necessary skill and apparatus for the prompt administration of them when required. The treatment of skin carcinoma and epithelioma has undergone a decided change in the last few years. The aim of the successful röntgentherapist at present is to produce a curative action as promptly as possible. He no longer hesitates with tentative doses, but boldly proceeds to administer promptly quantities of radiation carefully predetermined that are followed by prompt results.

In conclusion, it may be well to add that to give post-operative röntgentherapy, to insure against recurrence of malignancy, is considered good advice, and it should be employed whenever possible.

So we see that the field of usefulness to human ills for this benefactor, is wide and multiple, and we hope that our expectations may not be amiss in anticipating greater things for this agent in the future.

DISCUSSION

DR. H. I. KING (Aberdeen): Dr. Nessa's paper shows us the development and possibilities of the *x*-ray. I do not know of any agent that has come to us in medicine that has brought with it so much as the *x*-ray at least, in recent years, especially in the diagnosis of disease.

I wish to bring out some points in the fluoroscopic examination of the chest,—first, the diagnosis of tuberculosis in children, and, secondly, the diagnosis of syphilis in adults. Probably 95 per cent of tuberculosis is produced by way of inhalation. It is a disease passed from man to man, and the importance of the milk used is not considered as it was some time ago. It is asserted that 95 per cent of tuberculosis develops in children from one to fifteen years of age. The mortality of tuberculosis is in inverse ratio to the age. Tuberculosis starting in the lungs during the time in

life when the lymphatic system is not prone to tubercular infection, there is always associated with it a great enlargement of the bronchial lymph-glands, the same as with scrofulous glands in the neck; and these bronchial glands can be very easily demonstrated by the *x*-ray. Children have very thin chest-walls. Many a case of asthma between one and fifteen is due to enlarged bronchial glands.

The infection of bronchial glands in children is primarily the seat of tuberculosis, with an infection in the lungs which it is impossible to find at a very early stage. So the primary lesion is a bronchial-gland tuberculosis. If these cases are diagnosed and treated properly, it will prevent bone-tuberculosis and other forms, and, later, tuberculosis of the lungs.

As to the *x*-ray in the diagnosis of syphilis: It is a fact that there is almost always enlargement of the aortic arch in syphilitic cases of a year or so duration, due to syphilitic aortitis. These are constant, and in themselves are of diagnostic importance. In my limited work I have had four cases that I diagnosed syphilis from the fluoroscope by the enlargement of the aortic arch.

DR. MORTIMER HERZBERG (Vermillion): I might add a point that the doctor did not mention. Recently some of the workers in the East brought out the fact that by subjecting animals, notably guinea-pigs, to a definite amount of *x*-ray they are sensitized so that their normal resistance is reduced, and injections which ordinarily take two to four weeks to develop can be brought out in about ten days. Therefore, in making a rapid diagnosis of tuberculosis at times, we might sensitize the guinea-pigs, and then inject the fluid and get results within ten or twelve days. I have had no personal experience with this method, but the matter has been brought out in the literature within the past year and seems to be pretty well substantiated by the work of these men, so that the laboratory worker has taken his hold on the *x*-ray.

DR. J. G. PARSONS: From the point of the rhinologist, I think there is a great deal of importance to be attached to the value of the properly made and properly interpreted röntgenograms of the head, showing the condition of the accessory sinuses. One of the most difficult things for a man who is doing work on the accessory sinuses, is to get hold of a röntgenologist who can make the proper exposure, so that we can get the proper picture, or a plate that can be interpreted correctly. We are fortunate in Sioux Falls in getting work of that kind. However, I have come to look with a little bit of suspicion on the value of the röntgenogram as a diagnostic means in determining the pathology present as contrasted with its value in determining the anatomical relations, things which are of the utmost importance preliminary to operative work. This is especially true in ethmoidal and sphenoidal conditions, and in outlining of landmarks of the frontal sinus. I believe the time is coming when the man who is doing intranasal surgery—which at its best is working a great deal in the dark—will not attempt any surgery upon the accessory sinuses of the nose until he has established by a properly taken and properly interpreted röntgenogram the topography with which he has to deal. It is possible to do considerable harm by going into the wrong place in making drainage of, say, the ethmoidal region, and in going intranasally into the frontal sinus.

The same way in going into the sphenoidal sinuses, if one does not know in advance just how far his operative work is to extend.

Where there is a possibility of having pictures of this kind available it is absolutely incumbent upon the surgeon who is doing intranasal work to have this valuable aid at his disposal before he attempts anything along the surgical line.

DR. B. A. BOBB (Mitchell): I would like to sound a note of warning. Since the x-ray is becoming so universal in doctors' offices you will find that in doing screen work it is often misleading. If you have your screen two inches farther away or two inches closer, you will have a different shadow. So it is important that

you have a uniform method in examining your cases, and you will not be misled.

There is no question but what tuberculosis in the chest of the adult and other tumors can be almost always diagnosed by the fluoroscope, but when a man reads a paper on this subject and wants you all to become familiar with screen work because it will help you in diagnosis, I want to sound this note of warning.

DR. NESSA (closing): I have nothing in particular to add except to say that what Dr. Bobb states may be true, but, working with modern apparatus, where you can use the central ray by manipulating adjustable shutters and keep the screen stationary while moving the tube, you can trace shadows with a great deal of accuracy and not get the defects the doctor speaks of.

REMARKS ON SOME COMMONER DISEASES OF THE EYE, EAR, NOSE, AND THROAT

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MINNEAPOLIS

Of the many common diseases of the eye, ear, nose, and throat, I have chosen, for review, those affections deemed most likely to prove of practical interest to the general physician.

THE EYE

Foreign Bodies on the Cornea.—It is important to remember that the first, or epithelial, layer of the cornea is less than 60 microns in thickness, and, being the only one of the five layers that will regenerate or regain normal transparency, it is obvious that great care should be exercised in removing foreign bodies from the pupillary area, for injury to the deeper corneal layers means a permanent opacity and, consequently, visual impairment. For these reasons, in the removal of foreign bodies from the cornea, spuds are preferable to sharp or more pointed instruments, and should be held at an acute angle to the corneal surface during extraction.

Many eyes have been lost through neglect to determine the condition of the lacrimal sac prior to injuries of the cornea inflicted by design, or after accidental wounds. Serpentine, or pneumococcal, ulcer of the cornea, is one of the most vicious of all ocular diseases. It develops when corneal wounds become infected by the pneumococcus-laden discharges from a purulent dacryocystitis, or when the infection is conveyed to the eye from extraneous sources.

After every injury to the cornea, it is advisable to guard against infection by the use of antiseptics. Of the many antiseptics, a 1-3,000

solution of cyanide of mercury, or White's mercurial ointment, deserves special mention.

Acute Catarrhal Conjunctivitis (Pink-Eye).—This common contagious disease is frequently epidemic, as it is due to a specific micro-organism known as the Koch-Weeks bacillus.*

Symptoms: Pronounced superficial congestion of the conjunctiva, slight itching and burning sensations, lacrimation, mild photophobia, and a mucopurulent discharge.

Treatment: Cold applications. Instillations of a 5 per cent solution of protargol or a 50 per cent solution of argyrol, three or four times daily. Prevent agglutination of the lids by applications of a 2 per cent boric-acid ointment.

Subacute Catarrhal Conjunctivitis.—This variety of conjunctivitis usually affects both eyes, and occurs most frequently in old people. The clinical appearances are quite characteristic. In addition to the previously sketched objective symptoms of the acute form, the lids, especially at the inner and outer canthi, become moist and reddened from the irritating effect of the watery discharge. Another common symptom is headache, aggravated at night. The diplobacillus of Morax-Axenfeld is frequently present in the discharge.

Treatment: The specificity of the zinc salts in the treatment of this disease, especially when

*The best method of staining for the Koch-Weeks bacillus is as follows: To one part of carbolfuchsin solution, add twenty parts of water. Flood the slide with this solution, and allow it to remain for three to five minutes, then wash in water and dry between filter-paper.

due to the Morax-Axenfeld diplobacillus, has been convincingly demonstrated. The sulphate of zinc, in strength of one grain to the ounce, is the most potent of the salts.

Phlyctenular Keratoconjunctivitis.—This is a common disease of the eye, almost entirely confined to children and readily recognized by the characteristic clinical picture. The small nodular elevations, usually situated at the corneal limbus, are trailed by a triangular leash of vessels, the apex of which corresponds to the efflorescence. Photophobia, sometimes intense, is always present in this disease.

Treatment: The claims of Bruns, that the internal administration of small doses of bichloride of mercury is a specific for this affection, have been clinically confirmed in a large number of cases. Locally, 1 per cent yellow oxide of mercury ointment, used twice daily, is of service. Pathological tonsils and adenoids, frequently co-existing with this ocular disease, should be removed.

Simple Ulcers of the Cornea.—This indefinite term is applied to the non-progressive types of corneal ulceration. Erosions or small ulcers of the cornea may escape detection unless stained with a 2 per cent solution of potassium fluorescein. This method is also employed to differentiate between recent lesions and old scars, the latter not being discolored by the stain.

Treatment: When corneal ulcers develop secondary to diseases of the conjunctiva, treatment should be addressed to the exciting cause. As a routine therapy for simple ulcers of the cornea, the following is probably the most satisfactory: After cocainizing the eye, the ulcer is cleansed with peroxide of hydrogen, applied directly to the lesion on a cotton-shod toothpick, and followed by a careful application of concentrated Lugol's solution, as advocated by Verhoeff. To guard against the spreading of the solution to the unaffected tissues, the lids should be kept separated until the cornea becomes dry, and for about five minutes thereafter, to insure thorough saturation of the lesion. The eye is then flushed with boric-acid solution, and the lids released. The treatments may be made daily or on alternate days. Dionin, being an irritant, should never be used until the reparative stage is reached. Regression is indicated by the appearance of newly formed vessels budding out toward the site of the ulceration. A 5 per cent solution of dionin, or even the powder, used once daily, may then be of considerable service. The eye should be kept at rest by protective dressings.

Bandages are contra-indicated when conjunctivitis coexists, as their action is to interfere with the escape of secretion from the conjunctival sac. When iritis develops, atropine is strongly indicated, and, save in persons past fifty years of age, it is advisable to employ this drug when in doubt. Incidentally, it may be remarked that impairment or loss of vision is very frequently due to failure to recognize iritis in its early stage, when the evil effects may be successfully combated by the use of atropine.

Ophthalmia Neonatorum.—The clinical manifestations of this infectious disease are conspicuous. Occasionally one meets a clinically typical case in which micro-organisms, other than the diplococcus of Neisser, are responsible for the infection, hence the microscopic findings, *per se*, are not reliable diagnostic guides. In its management two indispensable requisites should be observed, namely, oft-repeated irrigations and avoidance of injury to the corneal epithelium. When the edema of the lids is excessive, it is proper to perform canthotomy, a measure which relieves pressure upon the cornea, as well as facilitating treatment and lessening the risk of injury to the cornea during manipulation. The sinister effect of cold applications in this disease is now generally recognized; conversely, heat is most beneficial, as it exerts a marked inhibitory action on the growth of the gonococcus. Hot moist packs should be intermittently applied day and night, not only for the reason that the thermal effect is to oppose bacterial growth and activity, but because warmth favors corneal circulation and thereby increases its resistance to bacterial invasion.

Since the conjunctival condition is self-limiting, the disease interests us chiefly as an infection which may involve the cornea.

In the early stage of Neisserian infections of the conjunctiva, the bulbous portion frequently becomes intensely swollen (chemosis), and, in turn, as a result of the pressure exerted upon the blood-vessels at the limbus, interferes with corneal nutrition. Furthermore, corneal infection is invited by the retention of pus in the sulcus formed by the chemotic swelling. The doctrine that nitrate of silver is the remedy *par excellence* for this disease, stood unchallenged for years. As the action of silver nitrate is to increase the conjunctival edema, this irritating agent is, therefore, contra-indicated in the early stage of the disease. If employed at all, it should be used only in the second stage, namely, when the chemotic swelling has disappeared. For

these cogent reasons, the non-irritating organic silver salts are preferred. I personally believe protargol possesses the greatest therapeutic virtue.

Protargol, 5 to 10 per cent, used in conjunction with frequent irrigations of warm 1-10,000 solution of permanganate of potash and hot fomentations, is an eminently satisfactory method of treatment. Ophthalmia neonatorum thus treated lessens the chances of the cornea sharing in the purulent process. The lid margins should be cared for as in other conjunctival diseases accompanied by excessive discharge.

Lime Burns of the Cornea.—This condition is best treated by bathing the eye for one-half hour several times a day with a 10 per cent solution of neutral tartarate of ammonia, the action of which is to dissolve the lime. Previous to these treatments, the eye must be cocaineized. Corrosions of the cornea from lime burns, unless promptly met, result in permanent corneal opacifications, caused by the deposition in the tissues of particles of calcium carbonate.

In concluding the foregoing remarks on the common ocular diseases, it seems pertinent to caution against the use of nitrate of silver, following instillations into the eye of hydrochlorate of cocaine, as the effect is to produce an insoluble chloride of silver, resulting in a permanent opacity of the cornea if a break in continuity exists.

THE EAR

Inspissated Cerumen.—When the mass is hard and firmly impacted, its removal, by syringing, is tedious and unnecessarily disagreeable unless previously softened by a solution composed of equal parts of glycerine and peroxide of hydrogen, or a 5 per cent solution of bicarbonate of soda. Several drops of either solvent instilled into the external meatus three or four times daily for one or two days, renders removal an easy procedure.

Furunculosis of the Meatus.—The lesions of this painful disease are single or multiple, and are confined to the outer portion of the canal. The marked tendency of the condition to recur, very strongly suggests a constitutional basis for its presence.

Treatment: Attempts to abort the formation of pus by remedial agents, or too early incisions, is futile. When a furuncle has "pointed," it should be incised. The condition results from staphylococcal infection, and usually responds to vaccine (stock) therapy, the treatment confer-

ring immunity in a very large percentage of patients.

Foreign Bodies in the External Auditory Meatus.—Animate bodies are quickly killed by saturating a pledget of cotton with chloroform, and placing it in the meatus for a few moments. The intruder may then be removed by syringing.

Before attempting removal of any inanimate foreign body from the external auditory canal, a careful inspection of the size and position of such body should be made. Substances which completely fill the lumen of the canal cannot be expelled by syringing. The use of instruments, except those designed for the purpose and in skilled hands, is unwarranted. Reckless attempts to dislodge foreign bodies from the meatus usually result in obtruding the offender farther into the canal, as well as in producing swelling of the adjacent tissues, thereby rendering deferred removal so extremely difficult as occasionally to lead to very serious consequences. When the membranocartilaginous canal is swollen, it is advisable to delay attempts at removal until the inflammation has subsided. When syringing is unsuccessful, the agglutinative method may be tried. This consists in saturating a camel's-hair brush with collodion, and placing it in contact with the foreign body. In a few moments, the collodion becomes fixed, and extraction can sometimes be accomplished by this safe and simple method.

Acute Purulent Otitis Media.—The successful management of this prevalent disease depends almost entirely upon timely and adequate tympanic drainage. In view of this well-established clinical fact, it is inferable that puncture (paracentesis) should be supplanted by a long curvilinear incision (myringotomy) of the tympanic membrane. It is important to remember that insufficient drainage of the tympanum invites extension of the purulent process to the mastoid cells.

In children, myringotomy can be performed almost painlessly without anesthesia. In adults, nitrous oxide gas is the preferred anesthetic. Aside from oft-repeated cleansing of the external auditory meatus with dry cotton sponges or irrigations with warm sterile aqueous solution, which mechanically aid in maintaining the patency of the opening in the drum-head, local therapy is ineffectual. As medicinal agents instilled into the auditory canal simply form an admixture with the pus, and do not reach the pyogenic membrane, their effect is negative.

Since all cases of aural suppuration, aside from those due to injury, are traceable to pre-existing infections of the nose and throat, which extend to the tympanum by way of the Eustachian tube, the antecedent focus should receive attention.

During the first day or two following the onset of acute aural suppuration, there is usually some mastoid tenderness and fever, symptoms which disappear after free drainage is established from the middle ear. The temperature rises concomitantly with an increase in secretion or greater interference with drainage, or as a result of these factors combined.

Mastoiditis.—Every case of acute aural suppuration that continues longer than ten days, should arouse our suspicions of mastoid involvement. If, at this time, or later, the flow of pus from the middle-ear is *continuously profuse and pulsating*, and there is *prolapse of the upper segment of the drum-head and posterior-superior portion of the meatal wall*, we know that the disease has eventuated in mastoiditis. Operative findings have conclusively proved that sagging of the posterior-superior portion of the meatal wall is a pathognomonic symptom of at least antral involvement. Great significance should be attached to these reliable diagnostic signs.

In the uncomplicated cases of mastoiditis, the fever does not usually exceed 102° F., being higher in children than in adults. However, absence of fever is no index to the condition within the mastoid bone, as there may be no elevation of temperature during the entire twenty-four hours, even when the mastoid cells are filled with pus.

Leucocytosis usually ranges from nine to twelve thousand—occasionally the count is much higher—and is accompanied by an increase of the polyneuclear percentage.

In many cases we may be able to add to the foregoing symptoms other significant clinical manifestations of mastoiditis—namely, post-auricular swelling; pain on pressure, elicited in some portion of the mastoid process, usually over the region of the antrum, emissary vein, or mastoid tip; a pathological condition in the mastoid cells, as disclosed by properly executed and correctly interpreted röntgenograms; and bony debris in the discharge.*

*A. H. Andrews has shown that microscopic examination of the aural discharge for bony debris, furnishes dependable information respecting the condition of the mastoid cells. A thick smear, dried and fixed with heat, lightly stained with hematoxylin, and then washed, dried, and examined with a low-power objective, reveals, when present, bony particles in the field, where they appear very dark or black.

It is important to determine the causal organism in every case of aural discharge. We know that streptococcal infection, when virulent in nature, causes rapid destruction of both soft and bony tissues, the purulent process often invading the mastoid in a few hours, thus rendering mastoidectomy an emergency operation.

Additional clinical evidence that a prolonged copious aural discharge is an expression of mastoiditis, is deduced from the fact that mastoidectomy promptly arrests the middle-ear suppuration.

Finally, it must also be understood that mastoidectomy is our chief weapon in preventing brain and lateral-sinus involvement.

While it may be asserted that many cases of aural suppuration continue for weeks, or even months, and cease, with little or no treatment, it should be borne in mind that the organisms responsible for the infection belong to the avirulent variety, and that symptoms indicative of mastoiditis were entirely absent. In other words, these are cases in which the purulent process is confined to the middle-ear cavity.

THE NOSE

Epistaxis.—Hemorrhage from the nares occasionally becomes so serious as to assume an alarming aspect. It is essentially a local condition, constitutional diseases being rarely responsible for its occurrence. It is sometimes difficult, in the presence of free bleeding from the nares, to locate its source, or to control the bleeding point when found. The common point is the anterior-inferior portion of the nasal septum (Kisselbach's area). The flow is usually readily checked by packing or by cauterizing the source with acid or actual cautery. Physicians may be spared many anxious moments when called to attend a case of nosebleed if they are provided with special nasal tampons. These Bernay sponge-splints consist of compressed cotton, which expand when they come in contact with moisture, and provide a very prompt and certain means of terminating nasal bleeding. In cases where hemorrhage is violent and profuse, it may become necessary to apply a post-nasal tampon in addition to the anterior packs. Owing to the danger of sepsis, this method should be employed only when other means fail.

Acute Rhinitis (Coryza).—By spraying the nasal chambers with a weak solution of cocaine and adrenaline (cocaine, gr. v; adrenaline, grt. xx; normal salt solution $\frac{1}{2}$ i), the swelling is reduced, drainage is re-established, and much of the bac-

teria and toxin-laden discharge is dispelled. This may be followed by a spray of warm Dobell's solution, and the local treatment concluded by spraying the nasal mucosa with the following:

Ol. eucalyptus	3ii
Salol	3i
Menthol	gr. xx
Camphor	gr. xxx
Fl. Albolene	q. s. $\frac{5}{4}$ iv

Constitutional Treatment: Hot baths, saline cathartic, hot lemonade, Dover's powders, or rhinitis tablets, the latter being of real value only when taken sufficiently often to obtain the effects of the belladonna.

Nasal Obstruction.—This condition is usually due to one or more of the following causes: turgescence, hyperplasia (polyposis), or hypertrophy of the intranasal tissues, ethmoiditis, deviation of the nasal septum, or an excessive amount of adenoid accumulation in the epipharynx. Chronic obstruction has for its commonest cause deviation of the nasal septum, the accompanying enlargement of the turbinal bodies being very frequently a secondary and compensatory effect. Sacrifice of the turbinates (by cutting or cauterization) to gain space, instead of correcting the septal deviation when it is the true obstructor, is a common practice which has brought just reproach upon our profession. However, true hypertrophies may require surgical reduction even after the septal deflection has been corrected by submucous resection.

Adenectomy is best performed with an adenotome, such as Schuetz's, Gradle's, or La Force's instrument, as these devices entirely obviate the danger of injury to the soft tissues.

THE THROAT

Peritonsillar Abscess.—It is not until the third or fourth day after swelling appears in the peritonsillar region that a nidus of pus has formed. The fibers of the muscles of the soft palate and tonsillar pillars are arranged vertically, therefore the incision for the release of the pus should be made nearly transversely, that is, on a line corresponding to the crown of the last molar tooth and the base of the uvula. An incision thus placed, *across* the muscular fibers, makes for adequate and continuous drainage of the abscessed cavity. The operation is rendered almost painless by first injecting the peritonsillar area with a few drops of a 1 per cent solution of co-

caine. The injection should be superficial, and not into the pus cavity.

Lacunar (Follicular) and Membranous Tonsillitis.—This disease is nearly always induced by streptococcal infection. When the discreet lesions of the lacunar type coalesce, the disease assumes the membranous form (membranous tonsillitis). The most satisfactory local treatment for either variety is a spray composed of the following:

Ol. cinnamon	gtts. x
Ichthyol	3 ii
Aqua dest.	q. s. $\frac{5}{4}$ i

M. Sig.: Spray the pharynx every two hours.

Constitutional Treatment: There is no medicinal agent comparable with diphtheritic antitoxin. Following the use of antitoxin, preferably administered intravenously, the membrane quickly disappears, and the pharyngeal tissues return to their normal state. The striking curative power of antitoxin in this disease is truly astonishing.

Vincent's Angina.—In this disease the sluggish ulcerations are usually monolateral. They vary in depth, and are covered by a grayish membrane, which abounds in fusiform bacilli and spirillæ. The untreated lesions often last for weeks. This type of angina occurs most commonly in males under the age of thirty. As the organisms present in the lesions do not grow on ordinary culture media, physicians unfamiliar with this fact have been baffled in their diagnostic attempts; therefore it is our imperative duty to appeal to the microscope in every doubtful case. Smears stained with carbolfuchsin will readily disclose the characteristic organisms of this disease.

This pseudomembranous pharyngeal inflammation appears as either a mild or a severe form, the former being confined to the tonsils, while the latter is marked by deferred phenomena, in which an extensive lesion sometimes invades the pharynx, uvula, soft palate, and, in some instances, the larynx.

Other conspicuous clinical characteristics of Vincent's angina are the areola surrounding the border of the membrane, bleeding from the underlying surface when the membrane is disturbed, and the characteristic fetor of the breath.

The initial symptoms of the mild type are pain in the tonsillar region on swallowing, general malaise, and slight, if any, fever. The severe form is attended by extreme prostration and, usually, a rise in temperature. When neglected, Vincent's angina may result in secondary strep-

tococcal infection, and usually terminates fatally when streptococcemia supervenes.

Treatment: The prompt and decided specific action of salvarsan in this disease is one of the most brilliant achievements in medicine. From a 0.9-gram dose of neosalvarsan, 0.2 gram is triturated in glycerine and thoroughly applied to the lesion, the remaining 0.7 gram being intravenously administered.

Tonsillar Hemorrhage.—Post-operative tonsillar hemorrhage may be sharp when large vessels have been severed, or may occur as a general oozing when capillary in nature. My personal observations have shown the most common sites of arterial hemorrhage to be either the superior portion, the midway region of the tonsillar fossa, or a point close to the base of the tongue.

The means employed for the control of tonsillar hemorrhage are manifold. Except in cases where the bleeding occurs as a mild oozing, little can be expected from the use of styptics. The internal administration of remedies intended to increase hemopexis, is not based upon a rational or scientific basis, nor is the theory supported by clinical results. Much valuable time is sacrificed by a false dependence on medicinal (local or general) agents. Mechanical means, skillfully applied, insure prompt and certain results. The proper time and place to arrest tonsillar hemorrhage is at the conclusion of the operation, when the patient is anesthetized and still in the operating-room. This applies particularly to operations done under general anesthesia, as the bleed-

ing in operations performed when local anesthesia is employed is usually delayed some hours. Hemorrhage ensuing some time after the operation (post-operative or secondary) is best controlled by first removing the clot, and, under good illumination, locating the source of the bleeding, and terminating it by surgical means. If it is diffuse (oozing) in nature, gauze packs or tonsil clamps usually answer; but if circumscribed the bleeding points should be seized with strong hemostat forceps and firmly crushed. Hidden sources may be brought to view by grasping the floor of the tonsillar fossa (superior constrictor muscle) with forceps, and lifting the tissues forward. The bleeding vessel, thus brought to view, is readily grasped and crushed. Sewing the pillars over a tampon is a popular method employed to terminate tonsillar hemorrhage; but, as the measures previously mentioned are adequate, this procedure seems quite unjustifiable. The pain and soreness following tonsillectomy in adults, is greatly mitigated by the local use of orthoform. This drug, being a non-toxic synthetic cocaine, may be used repeatedly without fear of untoward effects.

The methods of diagnosis and treatment proposed in these discursive notes, are largely based upon the conclusions of experienced clinicians, and, having been repeatedly clinically confirmed by the writer, are submitted to the general physician as suggestions considered sufficiently reliable to warrant their recommendation as guides in the management of the diseases touched upon.

THE USE OF BACILLUS LACTIS BULGARICUS IN THE TREATMENT OF INFECTED WOUNDS*

BY W. A. FANSLER, A. M., M. D.

MINNEAPOLIS

The use of the Bulgarian bacillus, as such, has come into prominence since 1904, when Professor Metschnikoff, of the Pasteur Institute, showed that the implantation of this lactic acid bacillus into the intestinal tract of man produced a decided reduction in the number of putrefactive organisms present. He believed that this procedure would tend to lengthen the life of man. He cited as an example the Bulgarians, whose chief diet is sour milk (Yoghurt) and rye bread, and among whom 1 person out of every 1,800 lives to be over one hundred years old, while in Germany only 1 out of 860,000 reached

an age of one hundred years or over. The statement of the properties of this bacillus was not new, but, being advanced by Metschnikoff, it was at once taken up, where before it had been given slight attention. He advocated its use only to decrease intestinal putrefaction; but a review of the literature shows that since that time the culture has been put to many other uses, among which is the treatment of diarrhea, middle-ear infections, breast abscesses, as a spray in diphtheria, vulvovaginal ulcers, and as a vaginal douche in gonorrhea.

When the Bulgarian sour milk, which contained the organism, was examined, it was found

*From the Clinic of Dr. F. A. Dunsmoor.

that there were numerous bacteria and yeasts present, but that there were two main types of lactic-acid-producing bacilli. These were isolated, and designated as Type A and Type B.

Morphologically, the organism is a large bacillus varying in length from four to fifty micra. Involution forms are common, and it normally shows considerable variation, depending on the culture media and the age of the culture. It stains readily with methylene-blue, and is Gram positive. The optimum temperature is from 40 to 45 degrees, and it grows best in milk, which it coagulates with acid-formation in from eight to eighteen hours. It also grows readily on agar and in bouillon and, to a less extent, on gelatin. The chief differences between Type A and Type B are a slight difference in staining reaction, and the fact that Type A produces approximately twice the amount of lactic acid as Type B. For this reason Type A is the culture used almost exclusively in this country.

The possibility of the use of the Bulgarian bacillus in infected wounds was first suggested to me in an article by Dr. John R. Caulk, of St. Louis, in which he reported the successful treatment of several cases of incruusted (alkaline) cystitis by the injection of cultures into the bladder. In these cases, as he pointed out, the most prevalent organism is usually the proteus vulgaris, which grows well only in an alkaline media. By the implantation of bacillus Bulgarus the contents of the bladder was rendered acid, and the habitat of the offending organism rendered untenable. (I have since used this treatment with success in one case.)

The rationale of the application of this treatment to infected wounds and sinuses is apparent. We know that the most common organisms found in these wounds are the streptococcus and the staphylococcus, which for rapid development require a slightly alkaline medium, although they will grow in a faintly acid medium, and the bacillus coli, which develops well in either a faintly alkaline or acid medium. Bacillus proteus also requires an alkaline medium. This being the case, any agent which will produce in the wound a constant, strongly acid reaction should quickly inhibit the further development of these organisms. We

have found this to work out in practice in the majority of cases where it has been tried.

We have used this method of treatment with success on a number of types of wounds, including one case of hand-infection, one case of empyema, one infected cyst of the face, and a large series of abdominal cases. At first we used the Bulgarian tablets dissolved in water, but more recently we have been using the liquid culture, which we have found more convenient, and, we believe, perhaps more potent for this use. Our method of procedure is to irrigate the wound with sterile water if there is much discharge, soak up any surplus fluid with gauze, and then pour or inject the culture directly into the wound. After two to five days bacteriological examination will, in most cases, shows bacillus bulgaricus present in the wound at all times. By the third day the discharge will usually be much diminished, and in from five to seven days will almost or entirely cease. The wound presents red, healthy granulations, and quickly heals. While using the bacillus no chemical antiseptic should be used in dressing the wound, for the organism is easily killed.

The advantages which I believe this method possesses over antiseptic solutions are, first, that there is a therapeutic agent of increasing strength constantly in the wound, while an antiseptic solution is soon diluted with the wound secretion and rendered ineffective; second, the Bulgarian bacillus, being present constantly, deeper penetration is obtained than in short irrigation; third, it is not destructive or toxic in any concentration, and may be readily destroyed if desired; fourth, over antiseptic powders it has the advantage of deeper penetration and of allowing free drainage; fifth, it is painless.

In conclusion, I would say that I am not advancing the Bulgarian bacillus as a panacea for all infected wounds, but I do advance it as a valuable, easily applied therapeutic agent. It has been my experience many times to see a wound cease discharging, and present a healthy granulating appearance within four or five days after starting the use of bacillus Bulgarus, where I would ordinarily expect two or three weeks' drainage under other methods of treatment.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

OCTOBER 15, 1917

DIPHTHERIA AT ROCHESTER STATE HOSPITAL

For three or four months there has been diphtheria among the patients and employees of the Rochester State Hospital, and, in order to show what work is done by the Division of Preventable Diseases of the State Board of Health, it is on record that 173 daily examinations have been made in the State Board of Health laboratories. Of the 15,922 examinations made in the main laboratory in Minneapolis, 14,205 were diphtheria cultures, 10,049 being from the Rochester hospital. In addition there were 104 virulence tests for diphtheria, 25 animal tests for tuberculosis, 64 typhoid isolation tests and 35 spinal fluids were examined for meningococci, as well as a number of miscellaneous specimens. All of these examinations require more time than the ordinary routine diagnostic examination. Owing to this enormous amount of laboratory work it has been impossible for the bacteriologists or directors to get away from the laboratories. Such an unexpected amount of work is not infrequently thrown upon the laboratory and its workers, and the fact that Rochester was so closely looked after by Dr. H. A. Burns and Miss Wret-

ling, R. N., shows how complete the supervision has been. Miss Wretling has been quartered at the hospital and took cultures and supervised the diphtheria control continuously between July 16 and September 11. Dr. Burns has been at the hospital for several days at a time.

Of course, the spread of diphtheria there was due largely to the overcrowding of the wards of the hospital, but all state hospitals are overcrowded, and it is impossible to get away from this condition. The Board of Control, however, has co-operated heartily with the State Board of Health, and as soon as isolation quarters, now being built, are ready, the institution will be cleared of infection.

There is no cause for alarm or uneasiness, as epidemics not infrequently occur in towns in which the population is even less than at Rochester and the infectious disease goes through the community like wildfire. Even in larger populations the same epidemic may occur. Many years ago at the St. Peter State Hospital, following a fire which burned one wing of the hospital, making it necessary to crowd the patients into the opposite wing, it became impossible to prevent epidemic diseases, and at one time there were between seven and eight hundred cases of mumps in the St. Peter State Hospital.

We simply want to assure our readers that the situation is well in hand, and we also want to show the necessity of some appropriation for the handling of such unusual conditions. It is hoped that the members of the legislature will take into consideration the difficulties of overcrowded institutions and the prevention of epidemiological diseases. Although the last legislature was generous in its appropriations, not enough money is on hand to take care of everything that may develop in this direction.

THE VENEREAL PROBLEM AGAIN

The Minnesota State Board of Health at its last meeting decided to take up the problem of venereal diseases and to put them under control in so far as it is possible eventually to make a division of venereal diseases in the State Board of Health. The conditions that are reported are growing more appalling each day, and the number of infected men and women is gradually increasing. This applies to a part of the Government service; and a percentage of the soldiers, both here and abroad, are suffering from venereal infections of both kinds. Of course, this is no reflection upon the great army body because it is estimated that from 80 to 90 per cent of the

men are clean, while the 10 or 20 per cent are more or less infected. However, if they are infected, their efficiency is impaired, and it becomes necessary, not only to classify these men, but to take care of them and to put them on their fighting feet again, unless they have syphilis in advanced stage.

The various social workers are taking up this subject, and the University of Minnesota has already inaugurated a plan to establish a clinic for the treatment of venereal diseases. This it has maintained for some years, but they hope to do it on a larger scale and with the co-operation of the State Board of Health. This matter, however, really belongs to the State Board of Health, but, as usual, sufficient funds have been withheld, and, up to the present time, it would be a difficult matter to finance a division or bureau unless the Safety Commission comes to the rescue of these various bodies. If an appropriation of forty thousand dollars can be secured, it will put all of the various boards in line for the carrying out of this very important work.

We are all congratulating ourselves that Dr. Irvine has been called to California to take charge, temporarily, of the formation of a bureau for the prevention of venereal diseases. He has inaugurated a big movement, and Minnesota will do well to copy the plan of the State of California, in order to assist the State Board of Health and the University in providing, not only an educational campaign, but a therapeutic campaign, as well.

STATE BOARD OF HEALTH PROBLEMS

The Division of Vital Statistics reported at the last meeting of the Minnesota State Board of Health, October 9th, on some of the difficulties of getting reports of births and deaths from physicians, and to that end some field investigations for the Division were made by Mr. L. W. Feezer, the publicity agent of the Board. Mr. Feezer is an attorney, and has been associated with the New York State Board of Health and the Massachusetts State Board of Health. During his investigations Mr. Feezer found that in many places the registrars of townships or counties were rather careless about their reports, and it became the duty of the agent to reprimand some of these men and explain to them why it was necessary to send in promptly the records of births and deaths. These investigations covered several towns, and evidently have done much good. Incidentally, physicians in various parts

of the state have been interviewed as to their negligence in reporting all the details of their births and deaths. It is perhaps not difficult to understand how a busy country practitioner puts off his records, when, if he had expended five minutes more at the time of the birth or of the death, all of the details could have been recorded.

Mr. Feezer visited twenty of the registration districts, and interviewed all of the registrars in each district. He also interviewed fourteen undertakers and sixteen physicians. One registrar was dismissed from office; the appointment of one sub-registrar was revoked; and the number of legal actions instituted was nine, two registrars being fined five dollars each. The proceedings against one physician were dismissed; in the case of two other physicians the proceedings are still pending. Three physicians were fined one dollar each, and one physician was fined fifty dollars.

The Census Bureau in Washington is very anxious to keep a complete record, particularly as to what percentage of birth reports and death reports of children less than one year old are not on file. It is very difficult to check up the death-reports of infants, and it is equally difficult to ascertain whether the birth records are on file, but, if they are not, proper steps are taken to secure the evidence. The percentage of missing birth reports, as determined from death certificates, is much larger than it should be; and the director of the Division of Vital Statistics has felt that church baptismal records would be very helpful in obtaining more complete returns. This has been tried out in St. Paul, but will not be tried out in Minneapolis until later on account of the difficulties and the time required before the work is completed. About a year ago an effort was begun by two women of Minneapolis to obtain genealogic records of as many of the native sons of Minnesota as possible. Co-operation of the State Board of Health was sought, and, as a result of the conference, a letter and a blank were sent out to about three hundred people. If these blanks are all filled out and returned, there will be a permanent file in the Division of Vital Statistics, which will be of great value both at the present and at a later period.

Mr. Feezer will keep up his work investigating registrations, and it might be well to suggest to the readers of THE JOURNAL-LANCET that they co-operate, not only with the State Board of Health, but with their local registrars in seeing that these returns are made more promptly.

The complaints which were filed against physicians have not been personal in any way, but counties have been taken up one by one, and all physicians who are at all delinquent will be interviewed so that no one specially will be singled out for prosecution.

One other difficulty is the return of the cause of death. We print here a letter from a former member of the State Board of Health in which he explains why he returns the death cause due to "retrograde metamorphosis." His letter will be interesting, as well as entertaining.

This is a "voluntary flow of things" relative to the deceased, who went to pieces after the classic form of the wonderful "One Hoss Shay."

Now, I would suggest that Minnesota once more take the front and give to the priests of the Census Bureau an appropriate appellation for the end of the Autumn of life—when there has accumulated a fund of physiological arrears that over-balances the constructive processes. This to help out the poor doctor who is unable to classify the cause of death, through ignorance or otherwise. I notice that the vision of "Natural Death" is much argued and theorized by the Academicians. So that it is not strange that a medical doctor may go astray. I am afraid that I am the original source of infection in the Stillwater district, for I have used the term Retrograde Metamorphosis in appropriate cases for 35 years. At least give me credit for a small following. You know the great are oftentimes not recognized until retrograde metamorphosis has overtaken them.

Shakespeare, one of our early biologists, said:

"And so, from hour to hour, we ripe and ripe,
And then, from hour to hour, we rot and rot,
And thereby hangs a tale."

But the tale is not yet coherent and unfolded. Good English however—rot and rot—retrograde metamorphosis.

Another old-time biologist—Bible, Ecclesiastes XII:

"The mind and senses begin to darken, the winter of life approaches with its cloud and storms; the arms—the protectors of the bodily house—tremble, the strong legs bow, the grinders cease because they are few, the apples of the eye are darkened, the jaws munch with only a dull sound, the old man is nervously weak and startled even by a bird chirping, he is afraid of even hillocks, his falling hair is white as the strewn almond blossoms, he drags himself along with difficulty, he has no more appetite, he seeks only for his home of rest, which he finds when the silver cord is loosed and the golden bowl is broken."

Katabolism to the *vita minima* senescence. (Modern translation.) Then the parting of the way—the transfer of the human soul to the world soul of after-life or immortality.

Now, if Retrograde Metamorphosis is non persona grata to the Census Bureau, try them on the above, "Katabolism to the *vita minima* of senescence."

As a last wail I would offer—Senile Involution, a developmental or physiological death, terminating a period of developmental or physiological decay. If the Census Bureau refuses to respond with a smile, refer

it to President Wilson. Dr. Grayson was promoted for less than this.

I think that Mr. Blank's soul rests in peace. I cannot do more for him. The nearest we can get to the Census Bureau is Senile Involution or—Retrograde Metamorphosis. I could do little for him in life, so I am doubly sorry that I cannot label him properly in death.

As to the term Metamorphosis, you will find it given in Gould's Medical Dictionary, Edition of 1894: "A term denoting structural changes in form which all organisms undergo during their development from the embryonic to the adult stage"; in Pathology, a "degeneration." The word comes from Greek words meaning across and a change. The retrograde change comes after the acme of progressive change and adulthood—resulting in a "Natural Death."

You can put him under "old age," but I cannot name the disease. It would be simply guess work without accuracy, and would be of no value. Why not say "Unknown"?

Or suggest to Cressy L. Wilbur, M. D., some of the above classy handles and ask him to adopt one or more of them in the international list of causes of death. To my mind they represent in a scientific manner some modes of death that dissolve the human organism, as well as animals and plants.

P. S.—Kindly note Dr. H. E. Robertson in reference to Gould's Medical Dictionary.

In reply to yours of April 12th, in re Mr. Blank, I do not like to have him labeled with the cold appellation of "Old Age."

In browsing around in literature, terrestrial and celestial, I ran across the chapter on Physiology in Mrs. Mary Baker Eddy's Science of Health and Key to the Hereafter. Mrs. Eddy's following is no joke—and politically deserves consideration.

I found the following—"Chemicalization" defined as follows—"The process which mortal mind and *body* undergo, the change of belief from a *material* to a *spiritual* basis." In the vernacular, "Passing on."

I do not pretend to understand Mrs. Eddy's Physiology or Theology. In fact, I do not believe that any one, outside the denizens of such State Hospitals as at St. Peter and Rochester, can have a clear insight into it. Yet the term appeals to me—"Chemicalization." The "Passing on" of the poor man—now in "No man's land." It is a good sweet morsel of a name. Makes one think of the Conservation of Energy and Correlation of Forces; that there may be something in the theory of eternal fires with the smell of brimstone in the Hereafter.

I would respectfully submit "Chemicalization" to Dr. Cressy L. Wilbur. If he should balk, refer it to Col. House.

ADDITIONAL DATA CONCERNING THE MAYO AFFILIATION

THE JOURNAL-LANCET is pleased to announce that some of the details of the affiliation will be interesting to our readers. The State now has all of the securities of the Mayo Foundation in its possession, and consequently they will be entirely under the direction and expenditure of the Board of Regents. The Mayos will have no

actual voice in the matter of expenditures except as is agreed to under their contract. None of the interest on the Foundation fund, however, is to be used until the principal amounts to two million dollars. In the meantime the Mayos will pay whatever sums are needed to meet the expense of the Foundation. Last year they paid out \$144,000; and this year they may pay out even more, but whatever the amount, they will see to its payment.

Ten per cent of the Foundation fund must be used outside of the state, and is cumulative. Another ten per cent, which is known as a contingent fund for each year, if unspent, reverts to the general fund, that is, if it is not spent during the year. Another feature has been cleared up to which many physicians objected, and that is that no fellow coming in contact with patients is to be paid out of the Foundation. This is a very important point and one which should be very strongly emphasized.

It seems now that practically all of the objections have been removed, and that the Affiliation is practically completed; and, if it is found necessary or advisable, the publication of the entire contract may be expected. It has been published in the public press, but not in a medical journal.

President Harry Workman, who delivered the presidential address this year at the Minnesota State Medical Association, refers to the amicable settlement of the Affiliation problem, and urges the Association members to assume the right attitude toward it and to dismiss all dissensions, now that the contract is completed.

MISCELLANY

A VISIT TO THE NORTH DAKOTA STATE SANITARIUM FOR TUBERCULOSIS

The writer recently visited the North Dakota State Tuberculosis Sanitarium, at Dunseith, and was much pleased, as many others have no doubt been, with the great growth and efficiency of the institution. Starting less than five years ago with one small cottage, the Sanitarium now occupies several buildings and cares for seventy-five or eighty patients. On the grounds, in addition to the original cottage and one or two others like it, there are two large cottages, altogether housing some forty or fifty ambulatory cases, an administration building that also serves as an infirmary for some thirty bedridden patients, a well-proportioned refectory, or commons build-

ing, a cottage for the superintendent, and various barns and outbuildings. Many improvements were underway, particularly in the line of perfecting the water, sewer, heating, kitchen, dairy, and fire-protection facilities. There were mentioned also repairs on certain buildings, new bedding, lockers, and office equipment, and the fitting up of an operating-room.

It is expected that the Workmen's Lodge of the state will soon build and equip a cottage similar to one of the larger cottages mentioned above, which was built and equipped by the Masons.

The late Dr. Frank King, through the North Dakota Anti-Tuberculosis Association, has given \$400 to equip a laboratory, but at present the money is on deposit, and the laboratory is being operated with only such equipment as it had before the gift, which enables it to make ordinary tests and examinations. The superintendent, who carries on all of the clinical and laboratory work, as well as all of the details of administration, would not have time to make efficient use of a more extensive laboratory. This detail, along with others that might be mentioned, indicates that the institution is failing to attain its maximum efficiency through a lack of the right kind of help. Many of the details of administration should be taken over by a good office man, or the clinical and laboratory work should be strengthened by the addition of another medical man.

Considered in relation to the number of cases of tuberculosis in the state, or compared with what some states have begun to do, the effort of North Dakota seems small; but when it is remembered that not only is this particular institution young, but that some states have not yet undertaken any care for persons suffering from this disease, that sanitarium treatment for tuberculosis began within the memory of living men, that the whole problem of treatment is still very much in a process of change and growth, and that many of the better informed of the laity understand better than the profession did forty years ago that the prevention and cure of tuberculosis is a matter of right living, the importance of the experiment being worked out at Dunseith can be realized. Not only does the Sanitarium benefit directly a considerable number of patients in a year, but it serves as an object lesson for all in scientific treatment, and it points the way to a larger development of society's means for handling many forms of disease, for example, to the county sanitarium plan for caring for the victims of tuberculosis perhaps, and to the establishment of psychopathic hospitals.

H. E. FRENCH.

THE DESIRABILITY OF THE NEW BOND ISSUE

The Executive Committee of the Ninth Federal Reserve District Second Liberty Loan of 1917 thus appeals to the public:

The United States is the richest, strongest country in the world, and it is not asking anybody, not even its own citizens to give it money.

It wants to borrow your money. It will pay it back with good interest.

There does not exist in the entire world a security so safe as United States Government Bonds.

For thirty-eight years, the United States has never issued a bond at a higher interest rate than 4 per cent. The last issue above 4 per cent was in 1879.

Four per cent bonds of the Government in ordinary times have sold at 114 to 119.

A \$1,000 bond of the United States Government could be sold through these thirty-eight years at anywhere from \$1,140 to \$1,190.

That's the kind of a country the United States is.

There is only one thing in the world better than actual gold or gold certificates, and that is the United States Government bond.

If you have the gold or paper money hidden away, it brings you in nothing.

If you have 4 per cent bonds running twenty-five years, the interest you will get in that time will be equal to the full amount of the bonds; and you still have the bonds that the Government will pay off at full face value in gold.

No state, city, county, or even the Government itself can tax you on these bonds unless you own more than \$5,000 worth. But if you own bonds, and you need money, you do not have to wait twenty-five years. Any bank will buy them from you or loan on them virtually to the full amount. The interest coupons that are attached to the bonds can be taken off as the interest periodically becomes due, and any bank or the postmaster in any town will pay them in cash.

The Second Liberty Loan of 1917 is the greatest investment opportunity ever put before the people.

Even if a man looks at it merely as a business proposition, it is the best thing in the world today. But when you consider that by loaning your money to the Government at this time, you are doing a service of loyalty and putting yourself on record as a patriot, it offers to every man, woman, or child who wants to enroll as a patriot the opportunity of a lifetime.

BOOK NOTICES

RÖNTGEN TECHNIC (DIAGNOSTIC). By Norman C. Prince, M. D., Attending Röntgenologist to the Omaha Free Dental Dispensary for Children; Associate Röntgenologist to the Douglas County Hospital; Etc. With seventy-one original illustrations. St. Louis: C. V. Mosby Company. 1917. Price, \$2.

This little book on Röntgen Technic will doubtless be helpful to beginners, especially those who have not had training. It is well illustrated, and there should be little difficulty in following the technic described.

One statement is apt to be misleading,—namely, the description of the high-tension current. It is called

direct current. The usual description of unidirection seems more definitely descriptive of this current, and should be used.

—DONALDSON.

DISEASES OF THE GENITO-URINARY ORGANS AND THE KIDNEYS. By Robert H. Greene, M. D., Professor of Genito-urinary Surgery at the Fordham University, New York; and Harlos Brooks, M. D., Professor of Clinical Medicine, University and Bellevue Hospital Medical College. Fourth Edition, thoroughly revised. Octavo of 666 pages, 301 illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, \$5.50 net; half morocco, \$7.00 net.

The publication of the fourth edition of this book convinces us that it is being read. Its careful reading impresses one with the fact that it is undoubtedly intended for surgeons and physicians, and was not written for students or those beginning the study of urology. The writers modestly state that it is not complete; that it is, rather, a record of personal experience. Probably more attention has been paid in it to the medical aspect of urology than is found in similar treatises and yet the surgical side is not at all neglected.

The authors have been liberal in quoting suggestions from such well-known and able urologists as Berger, Hartmann, Frisch, and Zuckerkandl. The work covers, in a concise and practical manner, most of the diseases of the urogenital tract.

—OWRE.

THE NEWER METHODS OF BLOOD AND URINE CHEMISTRY.

Gradwohl-Blaivas. St. Louis: C. V. Mosby Co., 1917, Octavo 240 pp.

Much interest has been shown recently in the application of chemical methods to the study of medicine, especially since the introduction of newer methods by Folin, Benedict, Lewis and others, so that tests which were formerly regarded as items of interest in the experimental laboratories of the physiological chemist are now held to be actual aids in the bedside problems of diagnosis, prognosis, and treatment.

Gradwohl and Blaivas of St. Louis have assembled in clear cut fashion the latest work on blood and urine chemistry and have crystallized into a small, but scientific and practical volume the tests and methods which should be of interest to the general practitioner who is alive to the study of the newer conceptions as hydrogen-ion concentration of blood, carbon-dioxid tension, non-protein nitrogen and the use of such instruments as the colorimeter, carbon-dioxid apparatus, Kjeldahl flask.

The book is concise, yet eminently comprehensive. Tests are clearly and accurately described, one method being given, as a rule, for each test. The actual construction of the laboratory together with selection of equipment and reagents is a feature of one of the chapters. References given at the foot of pages and chapters, together with sixty-five illustrative cuts add greatly to the value of this work. This book is one which must be read by everyone hoping to understand the language of the up-to-date internist who already has learned to appreciate the worth of blood-chemical analysis in his own work.

—JOSEWICH.

REPORTS OF SOCIETIES

MINNESOTA ACADEMY OF MEDICINE ANNUAL MEETING

The annual meeting of the Academy was held on September 12.

Following the usual dinner, the meeting was called to order by the president, Dr. Colvin. The election of officers for the ensuing year resulted as follows:

President—Dr. S. Grosvebor Cross.

Vice President—Dr. Warren A. Dennis.

Secretary-Treasurer—Dr. Fred Elmer Leavitt.

The retiring president made an address on the subject of "Lower Back Pain," which was listened to with much interest.

The matter of amending the by-laws to read "eighty" instead of "sixty" as the limited number of active members to the Academy was laid before the society. A few of those present favored the increase, but for the most part those who spoke were inclined to let the constitution stand as at present. Put to a vote, the amendment was lost.

The following visitors were present: Major Greenleaf and Captain Findley, from Fort Snelling, and Dr. Myers, of New York.

F. E. LEAVITT, M. D.,
Secretary.

THE OLMSTED COUNTY SOCIETY

The regular meeting of the Society was held on September 26 at the Mayo Clinic Assembly Room in Rochester.

The Secretary read the minutes of the last regular meeting held May 23, which were approved, also letters from Congressman Sidney Anderson and Senator Frank Kellogg, concerning the abrogation of the patent rights on salvarsan.

Delegates to the next meeting of the House of Delegates to be held October 10 in St. Paul were appointed by the Secretary, and were as follows:

Delegates: Dr. H. Z. Giffin, Rochester, and Dr. C. E. Fawcett, Stewartville.

Alternates: Dr. H. W. Meyerding, Rochester, and Dr. L. B. Ohlinger, Rochester.

The scientific program was as follows:

1. Dr. Bissell spoke on "Fat Embolism."
2. Dr. Mann reported on abstracts of papers on "Studies on Shock."

3. Dr. Adson demonstrated a case of "Pituitary Tumor Producing Bilateral Haemopsonin," and the paper was discussed by Drs. Sheldon and Benedict.

H. W. MEYERDING, M. D.,
Secretary.

NEWS ITEMS

Dr. Stephane Dulude, of Bagley, has purchased a practice in Dassel.

Dr. Merton Field, of St. Peter, has opened the Field Hospital and Sanitarium at that place.

Dr. Martin Nordland, of Robbinsdale, has taken Dr. R. M. Rosenwald, of Frazee, into partnership.

Dr. G. C. Gilbert, formerly of Marble, but for the past six months of Grand Rapids, has moved to Hill City.

Dr. D. R. Nugen, a recent Rush graduate, has become an assistant in the Burns and Christensen Hospital at Two Harbors.

Dr. W. J. Marcle, of Minneapolis, was elected vice-president of the Mississippi Valley Conference on Tuberculosis for the current year.

Dr. C. R. Christenson, of Starbuck, has disposed of his practice, and has moved to Morris, where he will work until called for service.

Dr. Chas. A. Bower, a homeopathic physician of Mitchell, S. D., has been appointed a member of the State Board of Health of South Dakota.

Dr. E. B. Maynard, of Dupuyer, Mont., has taken over the practice of Dr. L. M. Maguire, of Brady, Mont., the latter having received a commission.

An epidemic of diphtheria at the Minnesota State Insane Hospital at Rochester has existed since July 15. As many as fifty inmates were sick at one time.

Dr. T. J. Case, of Unionville, Iowa, has formed a partnership with Dr. F. D. Wilson, of Armour, S. D., the latter expecting to be called to army service at any time.

The Twin Cities are entertaining this week a number of medical and semimedical organizations in their annual sessions, among them being the State Medical Association.

The Sisters of St. Francis are making plans for a large addition to St. Mary's Hospital at Rochester. The improvements will call for an expenditure of nearly \$500,000.

Dr. C. O. Estrem, of Fergus Falls, has been elected secretary of the Park Region Medical Society, to fill the vacancy caused by the resignation of Dr. A. M. Randall, of Ashby.

The new \$8,500 nurses home at the Otter Tail County Tuberculosis Sanatorium has been completed, and is now occupied by Supt. Dr. A. G. Kessler, his nurses, and other employees of the institution.

Dr. C. D. Whipple, of Minneapolis, who was charged with the violation of the anti-Harrison narcotic law and bound over to the federal grand jury, was completely exonerated by that body when it heard the evidence.

The Minnesota State Board of Health has had a number of physicians arrested for failure to register births. The Board is compelled, literally compelled, to resort to such action to obtain observance of the law for the protection of her future citizens.

As a memorial to his wife, who died in 1914, Mr. J. C. Hallum, of Minneapolis, has donated his home at Minnetonka, to the United Church Hospital Association, to be used as a rest home for nurses of Fairview and Thomas Hospitals of Minneapolis.

Dr. John H. Andres, of Duluth, a member of a Minnesota regiment, died on October 5, at El Paso, Texas, at the age of 30. Dr. Andres was a graduate of the University of Pennsylvania, and had been head physician of the Duluth schools for several years.

Dr. Egerton Crispin, formerly of the Mayo Clinic, is a Lieutenant-Commander in the Naval Reserve and Director of the Medical Division of Naval Base Hospital Number Three of Los Angeles. This hospital unit, which will be used for foreign service, is now fully equipped and awaiting orders.

The following Twin City physicians are doing, or have been doing, contract medical work for the Government: Drs. Charles Lyman Greene, A. R. Hall, Peder A. Hoff, E. T. F. Richards, and Robinson Bosworth, of St. Paul, and Drs. Walter J. Marcle, H. R. Nordley, and R. E. Morris, of Minneapolis.

Dr. Charles E. Smith, Jr., of St. Paul, who has been associated with the St. Paul Department of Health, has been made assistant secretary of the Minnesota State Board of Health. This appointment was made after very careful consideration of men, and particularly of men who are anxious to take up public-health work. The

Board feels, in employing Dr. Smith as an assistant to the Secretary, that they have secured the services of a most excellent man.

The annual meeting of the Lake Preston Society was held at Lake Preston, S. D., October 3, with President E. H. Grove, of Arlington, in the chair. Dr. B. T. Green, of Brookings, read a paper on "Club-Foot Cases and Splints Devised to Care for the Same"; Dr. J. C. Baker, of Ramona, read one on "The Significance of Pain in the Feet"; Dr. L. N. Grosvenor, of Huron, gave a "Report on the Physical Defects Found on the Re-examination of 'Draft' Boys." The following officers were elected for the coming year: President, Dr. B. T. Green, Brookings; vice-president, Dr. L. N. Grosvenor, Huron; secretary-treasurer, Dr. J. C. Baker, Ramona; censor for three years, Dr. W. O. Leach, Huron; delegate to the state Association, Dr. E. H. Grove, Arlington.

PHYSICIAN WANTED

In a live, growing village, with good territory. Settlement largely Scandinavian. An excellent opening. Address 578, care of this office.

X-RAY MACHINE FOR SALE

A static x-ray and high-frequency machine; complete equipment; man or motor driven; good order. Bargain. Address P. O. Box 702, Aberdeen, S. D.

HOSPITAL FOR SALE

A small private hospital located in the Twin Cities is for sale. Patronized by the leading physicians. For further information address 583, care of this office.

PARTNER WANTED

In a good town in Southern Minnesota. I am alone at present. Always have been two physicians here before. Will make good offer to right man. Town has high school and electric lights. Address 584, care of this office.

MINNEAPOLIS OFFICE FOR RENT

A dentist would like to share office with a physician. excellent location in Minneapolis. Large, light office. Steam heat, hot water, low rent. Address 582, care of this office.

PHYSICIAN WANTED AT ONCE

In a good county seat town of 800 in North Dakota. Only doctor in town. For period of war, or will sell practice. Have joined the Medical Reserve. Address 591, care of this office.

ASSISTANT WANTED

Assistant wanted to general surgeon in Southern North Dakota. State qualifications, references, nationality, religion, and salary expected in first letter. Address 572, care of this office.

DRUG STORE FOR SALE

The only drug store in town of about 400; well settled farming country, in southeastern South Dakota. Good opening for a doctor with \$4,000 cash. No doctor in town. Address 586, care of this office.

PART OF ST. PAUL OFFICE FOR RENT

A dentist desires to rent to a physician two private rooms and to share with him a large reception-room on the third floor of the Lowry building, St. Paul. Address room 304, Lowry building, St. Paul.

DESIRABLE OFFICES FOR RENT

I desire to sublet my offices in the P. & S. Building, Minneapolis, for part or whole time. Will rent one or three private rooms with share in reception-room at very reasonable rates. Address 567, care of this office.

LOCATION WANTED

Position desired in the office of some physician going into the army, or as assistant to some surgeon with large practice, by an experienced M. D., familiar with microscopy, x-ray work, and general surgery. Address 580, care of this office.

LOCUM TENENS WANTED

A \$5,000 unopposed practice in town of 400 in Minnesota. Electric light and waterworks. Am commissioned in the army. Can have what you make. Nothing to buy. Must sign contract to leave upon my discharge. Address 590, care of this office.

PRACTICE FOR SALE

An unopposed practice in village of 400 in western Minnesota for sale to purchaser of office equipment, \$350. Practice has averaged \$4,000 for many years without surgery. Collections, 95 per cent. Health reason for leaving. Address 585, care of this office.

POSITION WANTED

Am 31 years old, have had two years' hospital and four years' general practice. Am married and have one child. Position desired with surgeon or busy practitioner. Will consider locum tenens. Registered in Minnesota and Wisconsin. Address 587, care of this office.

PRACTICE OFFERED

I will give free a \$4,000 practice in town of 400, in southeast South Dakota to physician who buys my office equipment, amounting to about \$300. Mixed population. Thrifty farmers in a good country. Money from the start. No deadbeats. Must leave by November 1st. Address 592, care of this office.

X-RAY APPARATUS FOR SALE OR EXCHANGE

I will sell at a low price or exchange for an automobile (roadster) a Scheidel-Western 18-inch x-ray coil and high-frequency combination equipment in first-class order. Roadster must be in A-1 condition. Address Dr. P. W. La Plount, Suite 424, 622 Nicollet Ave., Minneapolis. (Phone, Nic. 2925.)

POSITION WANTED

Am 43 years old, have had one year's hospital experience, two years of postgraduate work, and eighteen years' private practice. Am married and have family consisting of one child. American born. Will consider partnership. Registered in North Dakota, South Dakota, and Iowa. Address 569, care of this office.

PRACTICE FOR SALE

In Southern Minnesota town of about 1,100. Two main line railroads, electric light, city water, good schools, churches, banks, etc. First-class, thickly settled American farming territory. Very satisfactory competition. County and insurance appointments. Price and terms reasonable to satisfactory party. Address 574, care of this office.

POSITION WANTED

Assistantship or locum tenens opening desired. Minnesota preferred; would consider North Dakota. Norwegian, licensed in Minnesota. City of 2,000 or over preferred. Do eye, ear, nose, and throat work, and refraction, as well as general work. Aged 37, active, and willing, and not subject to draft. Write fully as to what you have to offer. Address 570, care of this office.

LOCATION OR PARTNERSHIP WANTED

Having been released from the M. O. R. C. because of an attack of acute articular rheumatism I am now looking for a location or partnership. I am an American, 39 years of age, married, one child. Have been a successful general surgeon. Am also a laboratory man. Own complete equipment, including x-ray outfit. Am an Episcopalian, Mason, and Odd Fellow. Desire a town of 2,000 to 10,000. Registered in Minnesota and North Dakota. Address 589, care of this office.

OFFICES FOR RENT IN P. & S. BUILDING, MINNEAPOLIS

Lease of very desirable top floor space in Physicians & Surgeons' Building. Runs three years. Reception, four examining, and large x-ray-room, with special transformer and plate-display and developing rooms. Laboratory and private toilet. Takes in whole ell with light on three sides. Rental under lease is \$100 per month; would be about \$125 at regular rates. Am going into M. R. C. Address or call upon Dr. Hugh S. Willson, 807-9 P. & S. Building, Minneapolis.

PRACTICE OFFERED

A \$10,000 unopposed, general and surgical practice in a town of 600 people, rich community, for the price of hospital and office fixtures. Hospital is nine rooms and thoroughly equipped, have two graduate nurses all the time. Hospital is self-sustaining. Must be able to do surgery. Hospital is equipped with x-ray, microscope and cystoscope and everything necessary for successful work. Price of all is \$2,500, half down and balance in one year. Will sell half interest and will make arrangements when you investigate it. Have a commission in the Medical Reserve Corps and will go in thirty to sixty days. Address 579, care of this office.

PUBLISHER'S DEPARTMENT

HOW TO PAY FOR LIBERTY BONDS

The Farmers & Mechanics Bank of Minneapolis will help anyone to buy one or more liberty bonds which may be paid for at once or on the installment plan. If bought on the latter plan, the purchaser loses no interest, and no charge is made by the Bank for its services.

The Bank is doing both the purchaser and the Government an admirable service.

KENILWORTH SANITARIUM

No words of praise are too high for such a work as Dr. Sanger Brown has long been doing at Kenilworth Sanitarium (at Kenilworth, Ill., a suburb of Chicago), in the treatment of nervous and mental patients.

Elegant appointments in all things about the building, and the very best diagnostic and therapeutic methods characterize the work of this institution.

SALINOS

Salinos is an elegant saline cathartic freely soluble in water, and just such a product as the physician likes to prescribe for faulty elimination.

Its chief constituent is a favorite cathartic with all physicians, but the elegance of its preparation is what makes it preferable to the ordinary prescription.

The Salinos Company of Minneapolis will gladly send samples and literature.

THE EITEL HOSPITAL, MINNEAPOLIS

Dr. Eitel is to be congratulated on the increasing number of new physicians who send their patients to his hospital and also on the hospital's rapidly growing reputation for excellence in all its lines of work.

The hospital's appointments are well-nigh ideal in many directions, and the public and private praise given it clearly shows that it stands very high both with the profession and the laity.

STANOLIND LIQUID PARAFFIN

The Standard Oil Company has given the medical profession a product in Stanolind Liquid Paraffin for intestinal lubrication that is of very great value in the efficient treatment of well-defined conditions, such as exist in hemorrhoids.

Every intelligent practitioner knows the value of such a product, and can but appreciate the fact that this great organization guarantees the purity of its product by the reputation of the Company.

A LATE PORTABLE COIL OUTFIT

The Western Coil & Electrical Company, of Racine, Wis., is manufacturing a new coil outfit, called the "Rapid," which combines features that will appeal strongly to many physicians. It is very compact, holding the x-ray generator, a six-inch tube, a tube holder, etc., in a small case that weighs but thirty-six pounds.

It is guaranteed to give a hip plate of a large patient in 25 seconds, and is ideal for all Röntgen work.

Its power and service and its price make this coil very attractive.

PHYSICIANS' COLLECTIONS

In a recent notice in these columns calling attention to the excellent facilities of the Merchants Collection Agency for making physicians' collections, the name of this company was wrongfully given as the Mercantile Collection Agency, which confines its work to mercantile accounts.

The Merchants Collection Agency has its headquarters in rooms 221-226 New York Life Building, Minneapolis, and makes a specialty of physicians' collections. It has filed a \$5,000 bond with the Secretary of State as surety for its clients.

THE CHICAGO LABORATORY

This modern and well-known laboratory divides its work into three departments,—chemical, pathological, and bacteriological,—and the men at the heads of these departments,—Dr. Ralph W. Webster, Dr. Thomas L. Dagg, and Dr. C. Churchill Crosby,—rank very high in their respective fields; and no one sending work to the Laboratory will ever have occasion to feel that it can be better done elsewhere.

The public clinical and analytical laboratory marks one of the greatest modern advance steps in medicine.

The Chicago Laboratory is worthy the highest commendation to our readers.

THE OTTAWA TUBERCULOSIS COLONY

The work of Dr. H. V. Pettit, in his writings, and particularly in his Colony at Ottawa, Ill., in dealing with tuberculosis is so well known that it would seem hardly necessary to call attention to it; yet there may be many physicians who do not know how highly Dr. Pettit and his work are ranked by the experts of the world.

Dr. Pettit's booklet upon "What the Tuberculous Should Know" is sent free upon request, and it is literature that is invaluable to every tuberculous patient, and, indeed, to almost every physician. It is well worth while to know what is going on in such places, and it is always a physician's duty to send every tuberculous patient to the best place for such patient.

AUTUMNAL AILMENTS

The Autumn months constitute the season during which the average practicing physician is called upon to treat the following conditions: 1. Typhoid fever, which is, more often than not, contracted at some unhygienic summer resort. The patient may return home during the first week or so, with headache, malaise, etc., or the premonitory or primary symptoms may appear after reaching home. 2. Malarial infection, in certain sections, which is more than usually rife in the Spring and Fall seasons. 3. The after-results of the gastro-intestinal disorders of infants and young children, due to improper feeding, etc., during the heated term. In almost every instance, when the acute symptoms have subsided, a condition of anemia and general devitalization is the final result that constitutes the essential indication for treatment. In convalescence from all forms of illness resulting in general debility, Pepto-Mangan (Gude) is the one ideal tonic and reconstructive. It not only revitalizes the blood, but also tones up every physiologic function. It stimulates the appetite, improves the absorptive capacity, increases energy and ambition and restores the blood to its normal condition. It is, thus, a general tonic and reconstituent of marked and certain value.

SUPPORTING CORSETS AND BELTS AND ORTHOPEDIC APPLIANCES

Every surgeon and practically every physician has frequent need of appliances in the above line; and such appliances, whether stock or special, must be scientifically made so that the needs of the individual patient will be met. The Spencer System is the outgrowth of great mechanical skill working in co-operation with high-grade medical and surgical talent, thus producing an efficient product not often equaled.

The Spencer corsets and supporting belts have particularly received the commendation of the profession, and any surgeon or physician called upon to prescribe such appliances will be pleased with the results to be obtained through the Spencer System. The Spencer maternity corset has many excellent features.

Mrs. E. T. Glaze, 637 East 18th St., Minneapolis, represents the Company here, and will be glad to explain the system and exhibit the stock goods or take orders for special appliances.

A SUBSTITUTE FOR MEAT

"Meatless days" and the oft-repeated warnings that economy in food is necessary to win the war, has called attention to a meat substitute invented some years ago by Dr. J. H. Kellogg, superintendent of the Battle Creek Sanitarium. The suggestion came from the Department of Agriculture at Washington, in protose, a purely vegetable compound, Dr. Kellogg combined the qualifications which he regarded as essential in a food which could satisfactorily replace meat. It contains none of the parasited or putrefactive germs harbored by meat; it is made to resemble potted meat in its physical aspects; it is palatable, and, chemically, is a reproduction of meat; furthermore, in large quantities it can be placed on the market at a lower price than the product which it is meant to displace. Each year sees a lessening of the herds, droves, and flocks of the country, and the war has greatly accelerated the movement. The housewife will therefore welcome such an article as protose, which will lessen or end her dependence on the butcher.

TYPHOID FEVER

Attention is directed to a timely announcement which appears elsewhere in this journal over the signature of Parke, Davis & Co., and bears the caption, "Typhoid Fever." Prophylaxis, diagnosis, and treatment, in logical sequence, are briefly and comprehensively considered in this advertisement.

Typhoid Vaccine, Prophylactic, is suggested as a suitable immunizing agent. It is a twenty-four-hour culture of the typhoid bacillus, grown on inclined agar and suspended in physiologic salt solution to which has been added 0.2 per cent trikresol as a preservative. It

is accurately standardized, and that it confers immunity from typhoid fever has been shown by an abundance of clinical evidence.

In the diagnosis of typhoid fever, the Typhoid Agglutometer has undoubtedly done much to popularize the Widal test and to extend the usefulness of that valuable diagnostic aid. Parke, Davis & Co. supply two forms of the agglutometer, designated as No. 1 and No. 2, with directions for use.

For the treatment of typhoid fever Typhoid Phylacogen is an agent of established value. A marked effect of its use in all favorable cases is an early subsidence of the fever and a prompt establishment of convalescence. The technic of dosage and other particulars of the treatment are covered in Parke, Davis & Co.'s literature on Typhoid Phylacogen.

AT THE FRONT

A great many physicians who have been in private practice are now or shortly will be in the service of the United States Government. Practically all of them are familiar with Antiphlogistine, and a great number will continue to employ this preparation in their field work, as it is supplied by the Government on special requisition.

Since the beginning of the war tens of thousands of packages of Antiphlogistine have been used in the hospitals of France, at base hospitals in England, and in garrison and camp service in Canada, Australia, and New Zealand.

The medical men who see service in France should remember that Antiphlogistine obtained from The Denver Chemical Mfg. Co., 116 Rue de la Convention, Paris, is composed of the same C. P. ingredients and compounded according to the same formula as the American product.

THE HYGEIA HOSPITAL

The Hygeia Hospital, of Chicago, treats drug and alcohol habits exclusively, and does so by a method given to the medical profession through the *Jour. of the A. M. A.*, so that its methods are strictly ethical, and, it may be fairly said, the institution has the endorsement of the profession.

The Hospital occupies a beautiful building on Michigan Boulevard, and the patients under treatment have every possible attention.

The method of treatment is by no means a cut-and-dried affair, a "gold shot" once a day. It is scientific. Every patient is given a minute clinical laboratory examination upon entrance, and the treatment is varied according to his needs. It is always thorough, and leaves the patient in such shape when he goes out from the institution that relapse is only a remote possibility.

Dr. Wm. K. McLaughlin is the medical superintendent.

THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, NOVEMBER 1, 1917

No. 21

MECHANICAL AND SURGICAL TREATMENT OF ANTERIOR POLIOMYELITIS*

BY ARTHUR J. GILLETTE, M.D., AND CARL C. CHATTERTON, M.D.

SAINT PAUL

MECHANICAL TREATMENT

Anterior poliomyelitis is the term by which every physician, at least, should designate the particular paralysis under discussion today, for, considering its symptoms and pathology, it signifies this particular form of paralysis very plainly, and, at the same time, expresses its only characteristic symptom, that is, motor paralysis. This is the one and only one symptom which is always, to a greater or lesser extent, present; and without it a diagnosis of anterior poliomyelitis or so-called "infantile paralysis" cannot be made.

There are times when the onset of the disease is accompanied by pain and fever. There are times when there is extreme tenderness for weeks and months with a marked peripheral neuritis. Then, again, there may never be, so far as any fever or pain is concerned, any symptom present except paralysis. There are many instances where there is never any illness complained of whatsoever, such as fever, pain, nausea, etc. Many times the patient goes to bed, and awakens in the morning and finds that one or more of the muscles are paralyzed and he is unable to walk; or, possibly, certain muscles of the arms are paralyzed, or a certain group of muscles of the spine, chest, or abdomen. Sometimes when the disease occurs in very young children, there is

no history whatever; but, as the child grows older, it is discovered that there are muscles of the body in which he has partial or complete loss of motion.

There are many forms of infantile paralysis which have no connection whatever with anterior poliomyelitis. Therefore, the term infantile paralysis is misleading, not only to the laity, but to the profession at large. Infantile paralysis is a misnomer when applied to anterior poliomyelitis, for it is rarely ever seen nowadays in infancy. It is mostly a disease of childhood and adolescence. Just at this moment we can recall only one case seen in infancy or a history of its having occurred in infancy, that is, under one year old. However, years ago, when first described it seemed to be confined to infancy. Of course, it does occur in infancy nowadays also, but much less frequently than in former years. Then, again, it is not by any means confined to infancy, childhood, or adolescence, although it certainly occurs most frequently at these periods, but it sometimes occurs in adult life. We have seen a number of cases, and some have been reported by other doctors, where it has occurred in men and women, and in one or two instances, in our own experience, in persons forty or fifty years of age. However, the latter is very rare. It is one of the changes that have taken place in the characteristics of the disease

*Read by Dr. Chatterton at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

of late years, that it occurs later in life now than it did when the disease was first described in the text-books.

The symptomatology is too well-known by those present today for us to go into detail, but we do wish to impress upon you the above-men-

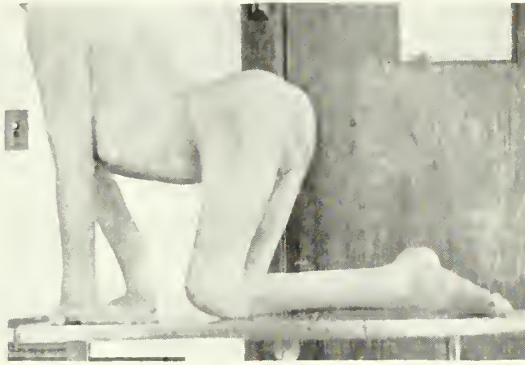


Fig. 1.—Case showing deformities due to infantile paralysis, and method of locomotion.

tioned fact, that a motor paralysis always exists and without it a diagnosis of anterior poliomyelitis cannot be made.

There is another bewildering and frequent expression heard among physicians which is de-

about these diseases, for we do. Of how many forms of rheumatism do we know the exact origin; and yet we know what to do for rheumatism. In fact, we do not think there is a single form of rheumatism that we are not able to improve, and, in many instances, absolutely cure. How rarely do we hear now of the various serious sequelae following scarlet fever, measles, whooping-cough, and chicken-pox as in former years, such as heart lesions, kidney lesions, etc. Who is there of us present today who would not immediately call a physician for any of these diseases occurring in his own family, simply because he did not know positively the exact micro-organism which produces it or the source from which it came?

In short, we believe that the profession knows more, and has discovered more, in the care, prevention, and treatment of anterior poliomyelitis, or so-called infantile paralysis, than it knows of many other diseases in which treatment does great good.

In so short an article as this one cannot go too much into detail as to the symptomatology, etiology, etc., of anterior poliomyelitis, as time and space will not permit; but we do hope this may stimulate the medical men to cease hypnotizing



Fig. 2.—Same case as Fig. 1; curvature of spine.

cidedly discouraging and self-deceptive to the medical profession and to the laity; and that is, "We know nothing about the origin of this disease, therefore, we know nothing whatever in regard to the treatment." Let us call your attention for a moment to the fact that you know about as much regarding it as you do about whooping-cough, scarlet fever, measles, and chicken-pox, and nearly as much as you do about rheumatism and many other diseases which we are able to benefit greatly by treatment. We doubt if any one of us would state or even acknowledge to himself that we knew nothing

themselves and the laity, as well, by constantly stating that they know nothing about the origin of this disease, for such talk has a tendency to lessen the confidence in themselves, and naturally lessens their ardor as to treatment. We feel we can positively say that there is not a disease that comes to us for which in nine-tenths of the cases we are able to do as much, considering the helpless condition the patients are in without treatment, as for paralysis following anterior poliomyelitis; and we beg of you not to discourage yourselves because you do not know all that we hope to know some day.

In any infection, treatment should be begun the moment you discover it, even though you may not be able to label the micro-organism. This is even more true in anterior poliomyelitis than in any other infection under the sun. Rest is the first and most important treatment of all. This period of rest should continue as long as there is any pain, tenderness, or fever. The next most important step is elimination by thorough cleansing of the entire body externally and, so far as possible, internally. The eyes, ears, nose, mouth, throat, and teeth should be thoroughly and frequently cleansed. The feet, hands, and scalp should be kept thoroughly clean. The kidneys and bowels should be flushed. If the patient has a great deal of fever, surely sponge-baths are indicated. The extremities and body should be kept from becoming chilled. Isolation should be the first thing thought of, and complete isolation for at least six weeks. By complete isolation we mean that only one person should enter the room to care for the patient. No child should be allowed near, nor any of the neighbors or any other member of the family. The person caring for the patient should be, if possible, past middle life. The last statement we simply make from observation, that is, as stated in the early part of this article, after middle life it is one of the rarest diseases contracted.

We wish, also, to touch upon the subject of massage, osteopathy, chiropractics, electricity, etc. Although they are the very common treatments, we wish to say, however, that from our own observation of cases which we have treated ourselves, and those which have been in the hands of competent men, we are not encouraged to advise or follow the above treatment ourselves. If such treatment is contemplated it should be attempted only under the advice of a thoroughly competent and extremely conscientious neurologist. Certainly, massage or any manipulation during the painful stage does a great amount of harm, and the same thing can be said of electricity during this stage. During the acute stage the limbs and body should be kept as straight as possible, but no attempt at movement of the limbs to the point of causing pain should be made. When the patient has so far recovered from the fever and painful period as to begin using his limbs, he should be carefully watched so as not to allow him to use them too much, for it often produces a muscular fatigue, which affects muscles even in health, and such fatigue is very much more serious in paralyzed muscles than it is in muscles where the circulation is per-

fect and where rejuvenation is, of course, more natural. Therefore, we encourage braces and supports even where there is not complete paralysis, but simply partial paralysis. Braces are also employed to prevent deformity.

The various illustrations herein illustrate very vividly the deformities which frequently result from infantile paralysis and its treatment; and these deformities can positively be checked and kept from occurring, certainly to a disabling extent, by proper orthopedic treatment in the early stage. All of the illustrations shown here are of patients who were allowed to go untreated for years after the so-called acute or early stage. Perhaps many of these people have been misled by sanguine promises made by those who depend upon osteopathy, chiropractics, Christian Science, massage, electricity, and vibration. If there are any patients on God's earth who ought to be protected from quacks and charlatans, they are the patients who have infantile paralysis. We so frequently hear the expression in regard to these quacks: "If they do not do any good, they cannot do any harm." They certainly can do harm by improperly treating these patients, irreparable harm, not only by wasting valuable time, but also by actually injuring the muscles, nerves, and ligaments by improper use and overwork, as overwork will produce fatigue paralysis, just as overtraining will weaken an athlete.

Many deformities which would later have to come to the operating-table may be prevented and practically cured by mechanical treatment alone. Let us warn the medical profession, also, of the indiscriminate sending of these patients to some instrument-maker. It seems to us that of all the cases under the sun requiring treatment, there is not a disease where a doctor should so thoroughly understand anatomy as in fitting and adjusting braces, stop-joints, springs, and supports in infantile paralysis cases. You cannot make and apply a brace satisfactorily by correspondence, drawings, or measurements. Each case is a law unto itself, and the characteristic of its particular deformity suggests the kind of mechanical support required. Each case must be understood as to the amount and character of deformity, and the age and intelligence of the person who is to adjust the brace. Each tendon, ligament, and paralyzed muscle must be studied; and then, and only then, can a mechanical support be applied and adjusted to do the greatest amount of mechanical good.

We will first illustrate the most frequent forms of deformities occurring and the braces and sup-

ports which they suggest. Secondly, we will illustrate the various operations which could be performed, such as tendon-transference, etc., where the contractions have so far developed because of lack of proper mechanical treatment, that it is necessary to resort to the knife.

SURGICAL TREATMENT

The rapid advance of the surgical treatment of paralytic deformities is quite parallel to the progress of the disease throughout the country.



Fig. 3.—Same case as Fig. 1; flexion of thighs on the abdomen to a right-angle, and marked lordosis of the spine.

During the past decade many new surgical procedures have been tried and found wanting; but certain operative measures have stood well the test of time, and are now the reliable equipment in our armament against this crippling affection.

Surgical treatment at present deals with only one stage of anterior poliomyelitis, and that is the chronic stage.

The chronic stage begins, in our opinion, only when improvement is slow or at a standstill, or perhaps when apparatus no longer fulfills its requirements and deformity is occurring in spite of its constant and continued use.

The number of years before surgical intervention should take place depends upon many conditions, but in best practices we are agreed that no lasting or permanent operation is to be performed until at least two years from the time of onset, and that during this time mechanical ap-



Fig. 4.—Same case as Fig. 1; paralysis and deformity of lower limbs. This is a suitable case for the Soutter operation for correction of flexion of the thighs on the abdomen.

paratus, muscle-training, extra warmth, and massage have had some chance to help in the restoration of the part.

Surgical procedures have been advanced to help or cure nearly every deformity following anterior poliomyelitis, and the success of such procedures depends greatly upon the location, pathology, action, and amount of damage done to the given part.

Operations upon the upper extremities are much less satisfactory than those upon the lower extremities because the motion of the hand is much finer than that of the foot, and very often greater numbers of muscles are affected in the upper extremity than in the lower.

1. *Operations on the Tendons.*—Tenotomy is one of the oldest of surgical operations, and is of much importance in the correction of mild deformities all over the body, but especially in the foot.

In cases where the muscle-return assumes a condition nearly normal, but where contractions have occurred, simple tenotomy with proper after-treatment may entirely cure such a deformity.

Examples are tenotomy of tendo Achillis in mild drop-foot, and division of plantar fascia in beginning claw-foot.

Tenotomy is the only operation that should be used in the improving stage of anterior poliomyelitis where deformities cannot be easily corrected by mechanical means.

Tenodesis—Tendon-fixation operations, as advocated by Galli and Putti, are meeting with considerable success in certain types of deformities. Briefly, the object of these operations is to convert the tendon of the paralyzed muscle into a ligament. The tendon is removed from its sheath, scarified, and sewed under the periosteum holding the foot in the position required. Some bury the tendon in a groove in the bone, and then cover it with periosteum. Putti cut the tendon from its muscular origin, and fixed it in a hole bored through the bone. The operation is useful, especially in flail conditions of the hand and foot, and also for fixing a part of the tendon to give stability to the partially paralyzed tendon, but it should be resorted to only years after the onset of the acute infection.

Weight-bearing and muscle-strain do not receive the same consideration in the upper extremity as in the lower.

It is quite impossible in a short paper to describe in detail any given operation, but we will try to classify various surgical procedures and the benefits derived from each.

Operations, then, may be classified as follows:

1. Operations on the tendons.
2. Operations on the muscles.
3. Operations on the bone.
4. Operations on the joints.
5. Operations on the nerves.
6. The use of foreign material.

Tendon-Transference.—The results of tendon-transference in selected cases of deformities due to muscular overaction or paralysis, in our opinion, are remarkable. Patients who come years after their attack with groups of muscles normal or over-developed, while other muscles are still very weak or paralyzed and deformity is occurring, are the types in which tendon-transference should be attempted.

The operation is done only after very careful study of the member in reference to muscular strength, and the part to be taken by the tendon to be transferred.

The principles of tendon-transference operations should be as follows:

1. To use the muscles that have nearly the same physiological actions as the paralyzed groups.
2. To establish muscle balance.
3. To correct deformity, either before or at the time of operation.

It is difficult, indeed, to have a flexor muscle take the place of an extensor group, and when this is tried the result is almost always unpromising.

Foot deformities, because of action of four groups of muscles, give the best results in this class of operations, and those we have proved satisfactory are as follows:

1. Transference of extensor longus hallucis and one or more common extensors to heads of metatarsal bones for claw-foot, hammer-toe, and foot-drop due to paralyzed or weak tibialis anticus and peroneus muscles or strong tendo Achillis.

2. Transference of tibialis anticus to the opposite side of the foot for equino varus deformity due to paralyzed or weak peroneal muscles.

3. Transference of peroneus longus into tibialis anticus and its bony origin for talipes valgus due to paralyzed or weak tibialis anticus.

4. Transference of peroneus longus into tendo Achillis for talipes calcaneus due to weak tibialis posticus muscle. If the posterior tibial group is completely paralyzed the peroneus longus will not be strong enough, but it can be successfully used as a reinforcement.

Transference of tendons above the knee is not very satisfactory, because extensor groups do not act as well as flexors and *vice versa*. However, the biceps or sometimes the semimembranosus and semitendinosus muscles may be transferred into the quadriceps extensor with some success, so that apparatus need not be worn, but

the strength of the transferred muscles will never approach the strength of the normal.

Tendon-transference in the arm and hand is rarely of much avail, because the motions of these parts are so complicated and so much finer in comparison than those of the foot, and because there are so many more groups of muscles that must be reckoned with. Sometimes wrist-drop can be prevented by transference of certain muscles, but the finer motions of the hand can hardly be obtained through tendon-transference.

We need not warn you that tendon-transference operations are to be done only after careful study of the parts in question, muscle-tests, and the function of the tendon in its new position. The



Posterior view.

Anterior view.

Fig. 5.—Old, neglected case of club-foot with marked bony deformity, due to infantile paralysis.

tendon transferred should be deeply anchored into bone and periosteum, and run under fascia and ligaments, or into tendon sheaths when possible.

The importance of mechanical apparatus, massage and muscle-training cannot be overlooked as valuable aids for at least six months after such an operation if the best possible result is to be obtained.

Tendon-shortening is practically never done in present surgical times.

Operations on Muscles.—Myotomy is used occasionally to lengthen muscles, but usually muscles can be stretched by mechanical measures, and division of them is rare. One division of muscles on the sole of the foot for severe claw-foot or contraction of muscles and plantar fascia is perhaps the most common example of this operation.

There is one procedure for marked lordosis of the spine, with the thighs on the abdomen due to strong psoas and iliacus muscles and contracted anterior thigh muscles, that is worthy of consideration. This operation was devised and described by Robert Soutter, of Boston, and consists of an incision over the anterior iliac spine. With a periosteotome all the muscles attached to the anterior ilium are loosened with the periosteum, and the thigh is brought down from its flexed position and held in correct position by plaster dressing. It is, indeed, a suitable operation for this troublesome deformity.

Operations on the Bone.—Operations on the bone are necessary only in extreme cases of deformity.

Skeletal remodelling by osteotomy is rarely called for.

Molding the shape of the foot by removal of wedges of bone or curettement has been done with some success.

Partial removal of the astragalus or complete astragalectomy, as advocated by Whitman, is the successful bone operation.

Astragalectomy, that is, removal of the astragalus and subluxation of the foot backward, was originally done for the deformity of calcaneus valgus or varus, but now it is used in many other deformities of the foot, especially flail conditions or greatly weakened muscles where the stability of the part is slight. The results of astragalectomy are very gratifying, and it is indicated in severe deformity, especially of the calcaneus type in children over seven years of age where a stable and moveable foot is desired.

Albee bone-grafts have been used without great success for curvatures of the spine due to anterior poliomyelitis.

Operations on Joints.—Arthrodesis is produced with great difficulty in younger children, and is almost impossible under the age of seven.

This type of operation is used most often as an aid to other operative procedures—tendon-fixation and transference, especially on the foot—to give more stability to the front part of this member.

In continued dislocation of the hip or shoulder arthrodesis is of decided value.

In flail-knee, however, we are of the opinion that it is better for a patient to continue the use of a brace with a catch-joint than to have an arthrodesis.

Arthrodesis should be done generally only in young adults because of the retarded growth that is very likely to follow this procedure.

The Use of Foreign Material.—Silk-insert or ligament operations were frequent until tendon-fixation became the operation of choice. The disadvantage of the silk extra-articular ligament was that it frequently came out of the tissue, and the ligament did not grow in length, and in itself would produce deformity. Many cases, however, have been successful even though the silk did not stay in the tissue because of the formation of fibrous tissue, causing a real live ligament to take the place of the silk insert.

Silk strands are also used occasionally to lengthen transferred tendons where the tendon is not long enough to reach the required insertion.

Intra-articular silk strands have been used to stabilize flail-joints with success, especially the shoulder, where this joint tends to become dislocated.

Bone pegs, ivory pegs, and nails have been used as an aid in arthrodesis, but their real value is dubious.

Neuroplasty has failed to meet expectations in anterior poliomyelitis.

Paralyzed nerves have been sutured and grafted into live nerves and slips of live nerves into paralyzed nerves without much success.

Muscular neurotization, where a live nerve is transferred with the muscle it supplies into paralyzed muscle, has proven successful in animal experiments and in a few clinical cases; but more time and cases are required to determine the worth of this procedure.

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DISCUSSION

THE CHAIRMAN: I am sure I express the sentiments of all of you when I say we appreciate the presentation of this paper. We are very fortunate here in North Dakota, for we have had no epidemic of infantile paralysis.

DR. W. H. BODENSTAB (Bismarck, N. D.): I had not intended to discuss Dr. Chatterton's paper, but the operation of transplantation of tendons recalls to my mind a condition which has only recently been recognized, and upon which Dr. Meltzer, of New York, has rendered several contributions, namely, the disturbance of the "law of contrary innervation." Life is dependent upon this law, and when a disturbance occurs the

result is manifested by a disturbance of function—by disease. Applying this principle to locomotion, it is essential that there is an inhibition of any form of contraction of the flexors with each contraction of the extensors, and vice versa; otherwise normal locomotion would be practically impossible. This principle is an integral part of the respiratory mechanism, as well as of the mechanism of swallowing. In fact, we can apply this law to almost any function in the animal body. When the auricles of the heart contract there must be a simultaneous dilatation of the ventricles; otherwise there occurs a condition of heart-block. When there is a contraction of the gall-bladder there must of necessity be a simultaneous relaxation of the muscle of Oddi at the termination of the common duct; otherwise there occurs an attack of gall-bladder colic.

During the normal process of intestinal digestion there must of necessity be a relaxation of the caudal end of the bowel while the cephalic end contracts and progresses forward. In the event of a disturbance of this law of "contrary innervation" the caudal end does not relax, but remains contracted, the volume between the two contracted limits becomes gradually smaller, while the contents of this volume remain practically unchanged, and the result is an increasing tension and the consequent colicky pain. In view of this principle it seems extremely important in the transplantation of tendons that these tendons be attached to the proper places.

I wish to ask the essayist whether, in the event of a faulty attachment, nature will take care of the situation? In other words, will nature under these circumstances transform a flexor into an extensor muscle?

DR. H. B. WENTZ (Verona, N. D.): I have a little girl who had infantile paralysis when she was four months old. I had her here yesterday, and I wanted to bring her over today. The whole left side of the child was paralyzed. I looked up a great deal of literature, and finally decided that, before anything could be done, it would be necessary to wait a while. In the meantime I made passive movements of the arm and the thigh, and it was remarkable in what a short time the leg seemed to recover its normal condition. I resorted to passive movements with the arm until the baby moved it at the shoulder. Some time passed until the baby was able to move the arm at the elbow. I think it was about three months before the child was able to move its arm at the shoulder, and somewhat like five more months before she was able to move the elbow. Then I worked with the wrist, and I am still working on the wrist. It is three years ago that the child had paralysis. Her hand now takes this position (indicating). The two hands, however, will work simultaneously, provided her attention is not called to what she is doing. She is able now occasionally to pick up a fork or spoon at the table.

I tried massage, but I determined that massage was more injurious than beneficial. My best results were obtained by confining the child's normal hand and encouraging her to take hold of things she desired to get, and in that way I found that she seemed to make better progress. I discovered it did not take very much effort to tire her in her walk. Now when she gets tired there is a quite noticeable toe-drop. Now, if I can get some information how to proceed to better the condition of this child, I shall be very glad.

DR. J. CRAWFORD (New Rockford, N. D.): Referring to the case of the Dr. Wentz' child: The fact that the lesions are unilateral and the parts spastic, instead of flaccid, would lead one to the conclusion that the lesion was cerebral, probably due to a hemorrhage, and not spinal. It is a safe rule in spastic lesions of young children to assume that the lesion is always cerebral. If the paralysis is flaccid the lesion is in the anterior roots of the spinal cord, as in infantile paralysis, anterior acute poliomyelitis.

DR. CHATTERTON (closing): The use of a gas-pipe bed in an extremely tender case of infantile paralysis is very satisfactory. Some other precautions must be used to keep the feet at a straight angle, such as plaster-of-Paris dressings or splints. The use of a frame or even a hard bed will tend to relieve the patient's suffering. The greatest advantage of a Bradford gas-pipe bed is that an opening can be made in the canvas and the bedpan placed underneath it, which does not necessitate moving the patient about in the bed.

The use of a flexor or extensor muscle in tendon-transference, that is, where the flexor is used for an extensor or an extensor for a flexor, is not very satisfactory. As I said in the paper, the ideal muscles for tendon-transference are those which have nearly the same physiological action,—for example, where the great extensor of the toe is used to pull up the entire foot, rather than for its original duty of extending the toe. The flexors, such as the biceps or hamstring group, can be made to support a quadriceps extensor muscle only after a great deal of education. Muscle-education requires months or even years before the flexor muscles assume the new function of extension. We believe that, if the antagonistic muscles are used,

such as extensors used as flexors and vice versa, the results are very often unpromising.

In reference to the doctor's little girl: Her history sounds very much like one of cerebral spinal infantile paralysis. We often say anterior poliomyelitis, which means that the trouble is limited to the spinal cord, but we do not have a cerebral spinal infantile paralysis where the reflexes are spastic. One of the most important methods of treatment is, as the doctor said, muscle-training,—the endeavor to get the child to use the muscles. We do not use the term muscle-training the same as do neurologists, and I do not think it is possible to get results or muscle-contraction unless there is some nerve still visible. Muscle-training is still used in muscles that still have slight power of contraction and can be educated.

I am very much surprised that someone did not say something about electricity. We feel that more harm is done through the use of electricity than anything else that we know of, because the parents are misguided in the results to be expected. It is impossible to give electricity to muscles that are paralyzed unless you use a strong current. We have found it impossible to treat a child under five years of age with any electrical current because the child will not stand the pain that is connected with a current strong enough to stimulate the deep muscles. In our opinion, if electricity is given at all the nodal and stimulating point must be found. The electrical current should be used to produce only a few contractions for each muscle; and to do this it requires the services of a trained neurologist. Absolute harm is done by the usual method of electrical treatment, that is, by putting the foot in water, one electrode in a basin, and one to the patient's back, then turning on the current and giving a treatment sometimes for a half or a whole hour.

SELECTION OF THE DONOR FOR TRANSFUSION*

BY A. H. SANFORD, M. D.

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For years transfusion has been looked upon as a valuable emergency life-giving measure. Recent simplification in technic has brought it into popular favor, and the benefits of this form of therapy can now be utilized by any physician. The obstacles in the way of transfusion at present are not difficulties in the operation itself, but fears arising from the knowledge that the selection of a donor is a matter of absolute moment, and that the results may be most disastrous if a weak, perhaps dying, patient is suddenly shocked by the introduction within his veins of incompatible blood.

Years ago Landsteiner pointed out the fact that human beings can be classified in groups by studying the action of the serum of one person upon

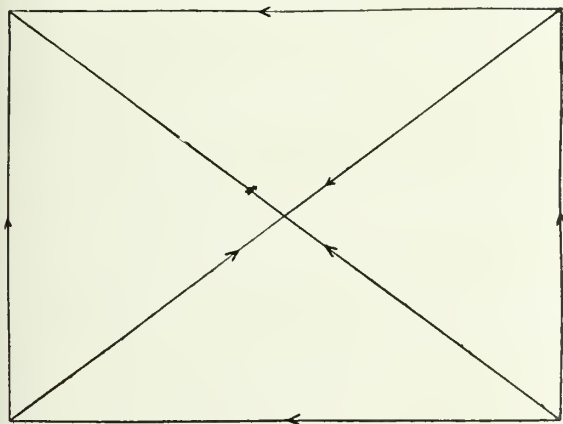
the corpuscles of another. Several years later Moss made the discovery that there were not only three groups as the former worker had reported, but a fourth group. The interrelation of the Moss agglutination groups is easily understood from the accompanying diagram.

It is evident that care must be exercised in the selection of the donor. If possible, it is best to have the donor and the patient in the same group. This is not absolutely necessary, however. The rule for the selection of the donor is evolved on common-sense principles. Blood of a donor containing agglutinin for the patient's corpuscles can be transfused with impunity, as it is immediately diluted and diffused in the patient's own blood, doing little, if any damage, to his corpuscles. On the other hand, if a donor's corpuscles are agglutinated by the patient's serum the transfusion

*Presented before the Minnesota State Medical Association, St. Paul, October 11, 1917.

will result in an immediate clumping together of the transfused corpuscles. The mass action of a large amount of agglutinating serum on a comparatively small amount of corpuscles produces a reaction in the patient similar in all respects to anaphylactic shock. A study of the diagram makes it appear that any donor can be used for Group 1 individuals as they cannot agglutinate corpuscles from any group. On the other hand, Group 4 persons (43 per cent of all) must have donors from their own group, as their serum agglutinates the corpuscles of all other groups. However, a Group 4 donor can be used for any one, as his corpuscles are not agglutinable.

I (No agglutinin)
(10 per cent of all persons) III (1 agglutinin) "B"
(7 per cent of all persons)



II (1 agglutinin) "A"
(40 per cent of all persons) IV (both agglutinins)
"A" + "B"
(43 per cent of all persons)

Moss agglutination groups: The corpuscles of the various groups are agglutinated by the serums of the groups from which the arrows lead.

Group 2 and Group 3 donors are, of course, absolutely incompatible with each other. Patients of these groups must have donors of their own group or of Group 4.

There are several methods for selecting donors which I shall review, briefly, before describing in detail a simple method that can be used by any one who does only an occasional transfusion.

The old macroscopic method still used in many laboratories, is accurate and is not objectionable except that it is time-consuming. This procedure, described in various texts (Bolduan, Kolmer, etc.), consists in mixing in a small test-tube a definite quantity of a suspension of washed corpuscles of the donor with three times the amount of the patient's serum and also in a similar manner the donor's serum with the patient's corpuscles. These tubes of cells and serums are incubated for two hours, being examined every

few minutes for signs of iso-agglutinins or iso-hemolysins. At the end of two hours, if no agglutination or hemolysis has occurred, the transfusion is usually done, though some men have advocated keeping the blood over night in an ice-box before concluding that there is no incompatibility. Even a slight trace of hemolysin in the patient's serum for the donor's corpuscles is objectionable. However, it is a fact, to be remembered, that hemolysis does not occur unless it has been preceded by agglutination.

A modification of this method is a micro-macroscopic method, using capillary tubes and small quantities of blood. This method is said to be more quickly completed than the preceding one.

The microscopic methods can be performed accurately and with a great saving in time. Recently Moss has published a description of the method he is using. This necessitates the keeping on hand serum of Groups 2 and 3. Hanging-drop preparations are made by mixing a drop of suspension of the cells of the individual of the unknown group with two drops of serum of Group 2; and another preparation is made using serum of Group 3. Agglutination with both serums places the unknown in Group 1. If the Group 2 serum agglutinates the corpuscles, the unknown is in Group 3, and if the corpuscles are agglutinated by Group 3 serum, the unknown is in Group 2. If no agglutination occurs after thirty minutes the unknown is in Group 4. The serums of the known groups may be preserved for a long time if kept sealed and sterile.

The method described by Brem more than a year ago is also microscopic and very similar to the Moss method, but it has, I believe, some advantages over the latter and is the simplest and safest one that we have. These two methods are essentially the same except that the corpuscle-suspensions of known groups, as well as serums, are used. The technic as we have used it daily for more than a year is as follows:

It is necessary to have at hand serum- and corpuscle-suspension of either Group 2 or Group 3, and, if possible, of both. There being only a few individuals in Group 3 we always use this group, if possible, for testing unknown blood, as we have a greater chance of finding that the unknown is not in the same group.

Serum is obtained by collecting about 2 c.c. of blood in a dry sterile tube by vein-puncture or by sticking the finger, in the same manner that we would collect blood for a Wassermann test. This

Blood is centrifugalized after separating the clot to obtain clear serum. The corpuscle-suspension is prepared by putting two or three drops of blood in 1 c.c. of a 2 per cent sodium citrate solution. These cells are not washed, but are used in their own citrated plasma. The slides for examination are prepared by placing two drops of known serum (preferably Group 3) on a cover-slip by means of a sterile loop. After flaming the loop to remove the remnant of serum clinging to it, one loopful of the corpuscle-suspension of the unknown blood is added to the serum. The cover-slip is inverted over a hollow-ground slide, and the hanging drop is ready for microscopic examination. Another cover-slip and slide is then



Fig. 1. Apparatus: Microscope, "hanging-drop" slides and cover-slips, wire loop and burner (or alcohol lamp), and tubes for serum and corpuscle-suspension.

prepared taking first two loopfuls of unknown serum, and then one loopful of known corpuscle-suspension. The slides are now examined with a microscope with a low-power objective and a high-power eye-piece for agglutination of corpuscles in the hanging drop. This usually occurs almost at once. Tipping the slide from side to side carefully so as thoroughly to mix corpuscles and serum, sometimes hastens the end-result. If there is no agglutination on either slide the unknown and the known are in the same group. This will seldom be the case if the known blood we are using is Group 3. If there is agglutination in both hanging drops then our unknown is in the reciprocal group, that is, Group 2. If the known serum agglutinates the unknown corpuscles, but unknown serum contains no agglutinin, then the unknown is in Group 1. We usually prove this by using both Group 2 and Group 3 serums with

the unknown corpuscles, as agglutination should occur with both. No agglutination of the unknown corpuscles, but instant agglutination of the known corpuscles, by the unknown serum, indicates that we are examining blood of Group 4. We prove this by testing with corpuscles of both Group 2 and Group 3. Agglutination should occur with the cells of both of these groups. By the Brem method the group of an unknown may be determined in fifteen minutes or less, including the time of bleeding the person and centrifugalizing the blood-serum. With the Moss method in testing Group 4 individuals, it is necessary to wait thirty minutes before deciding that no agglutination has occurred with the known se-

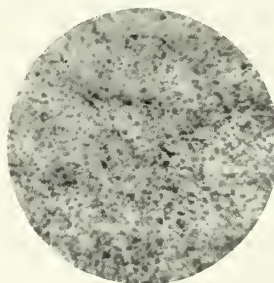


Fig. 2.

Fig. 2. Microphotograph showing no agglutination of corpuscles.

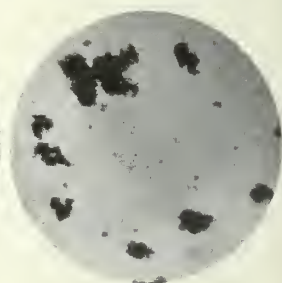


Fig. 3.

Fig. 3. Microphotograph showing agglutination of corpuscles.

rum and the unknown cells. On the other hand with the Brem method agglutination occurs almost at once with the known cells and the unknown serum. As 43 per cent of persons are in this group it is evident that the latter method is time-saving when many persons are being grouped, and it is on that account preferable. There is one disadvantage of the Brem method in comparison with the Moss method, and that is in the fact that the suspension of red blood-corpuscles autolyzes in a few days. It is advisable, therefore, to have available a source for fresh samples of blood of both groups.

Moss originally studied the grouping of 100 persons in series of 20 each, and determined that 10 per cent were in Group 1, 40 per cent in group 2, 7 per cent in Group 3, and 43 per cent in Group 4. During the past year we have kept a record of the group of 943 persons, of whom 318 were professional donors and 625 were patients. Our percentages for the four groups are as follows:

Group 1.....	5.09 per cent
Group 2.....	42.42 per cent
Group 3.....	8.80 per cent
Group 4.....	43.69 per cent

Our figures for Groups 2 and 4 are practically the same as those of Moss. We found in our series more Group 3 than Group 4 persons, which was not Moss' experience.

It is thought that the property of possessing iso-agglutinins that can be definitely classified is inherited, being governed by Mendelian laws. If both parents are in the same group all offspring will be in that group. If the father is in one group, and the mother is in another, the offspring may be in either group. In accordance with the studies of Landsteiner, Group 4 may be explained as a combination of Groups 2 and 3. We have seen a father in Group 2, a mother in Group 3, and a son in Group 4. It is an interesting speculation as to whether this may not be proof of Landsteiner's theory.

The question is often asked as to whether an individual may change his group, and it has been suggested that a patient should be retested after transfusion for a possible change in group. We are not in a position to definitely state that a person does not change his group; however, in the few cases of possible change in group that we have studied we are more willing to admit that some mistake had been made in our first test of the individual's blood rather than that it had acquired new biologic properties as the result of transfusion. We have repeatedly examined the blood of a Group 1 individual, who has no agglutinin in his serum, and have found, after many transfusions with blood of all four groups, that he is still in Group 1.

The point is often raised by men who do only an occasional transfusion that it is not feasible to have at hand the necessary blood of known groups, and to go through the test as I have described it. This is true. However, it is a very simple matter to use Brem's method to determine whether a prospective donor's blood is suitable for the recipient, and not really know to which group either individual belongs. The technic for such a test would be as follows:

From the patient collect from 1 to 2 c.c. of blood in a dry sterile test-tube, and allow this to clot and the serum to collect, either from standing or being centrifugalized. In another small test-tube containing 1 c.c. of 2 per cent sodium

citrate make a suspension of corpuscles with two or three drops of the patient's blood. In like manner prepare a tube containing the donor's serum, and another of the donor's corpuscle-suspension. With a clean wire loop mix two drops of the patient's serum with one drop of the donor's corpuscles on a cover-slip, and then two drops of the donor's serum with one drop of the donor's corpuscles on another cover-slip. Make hanging-drop preparations by inverting over hollow-ground slides, and examine with the microscope. If, after waiting several minutes there is no agglutination on either slide, it is evident that the donor and the patient are in the same group, and the operation may be performed. If the donor's serum agglutinates the patient's corpuscles, but there is no agglutination of the donor's corpuscles by the patient's serum, the transfusion may be safely done, knowing that the donor is not in the same group as the patient. But, if the patient's serum shows any agglutinin for the donor's corpuscles, then under no circumstances should that donor be used, but another individual should be selected for trial, and the test repeated. Except in actual emergency transfusions complement-deviation tests for syphilis should be made on the blood of donors.

In conclusion, I would repeat that in our experiences in a large number of transfusions in the past year we have found the Brem method exceedingly simple, time-saving, and accurate in the selection of donors; and also that the principles of this test can be applied by any one testing the recipient's blood directly with that of the prospective donor.

It should always be remembered that the essential thing in the selection of a donor is to be certain that the patient's serum will not agglutinate the donor's corpuscles. (Figs. 1, 2, and 3.)

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CARCINOMA OF THE COLON*

BY G. M. WILLIAMSON, M.D., L.R.C.P.&S. (Edin.)

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In carcinoma of the intestine 95 per cent of the cases occur in the large bowel, and of these a little more than one-half occur in the rectum; above the rectum the sigmoid is most frequently affected; then follow, in order, the cecum, the splenic and hepatic flexures, and the descending colon, the transverse and ascending colon being attacked less frequently.

The condition is usually primary and single.

It occurs more frequently in males and usually between the ages of thirty and fifty years, more often at the early age, that being characteristic of cancer of the intestine.

Carcinoma of the large bowel is one of the least malignant forms of the disease. The tumor is slow of growth, and metastasis generally occurs late in the disease; infection of lymph-nodes and of the liver is late, and extension through the intestinal wall to some adjoining organ is rare.

The physical characteristics of the growth vary considerably, but usually conform to one of two types:

1. The hypertrophic, in which a large mass forms, perhaps occupying the whole lumen of the bowel. It is of fairly rapid growth, usually associated with ulceration and hemorrhage, and obstructive phenomena are late in appearing.

2. The sclerosing form of tumor develops as an annular growth around the bowel, the lumen of which is so constricted that it is almost obliterated.

It is an astonishing feature that the function of the bowels is carried on without much pain or difficulty until the lumen is almost obliterated; then suddenly a serious attack of obstruction occurs.

The future of the patient depends upon the early diagnosis of the disease.

I have pointed out that metastasis and involvement of adjoining structures occur late, but in the absence of very definite symptoms the diagnosis of cancer of the bowel is by no means easy. The early symptoms, however, are very often vague and overlooked until an attack of acute obstruction at once clears up the diagnosis and threatens the patient's life.

These slowly progressive cases cause more or less disturbance of the stomach accompanied by colicky pains with diarrhea or constipation. As the disease progresses there will be loss of weight and marked failing of strength, and sometimes a pronounced cachexia.

A tumor cannot often be felt, or demonstrated even by the *x*-ray, so that the condition may go for a long time before being recognized.

It is to these early vague symptoms that I wish to direct attention, for, when the case is diagnosed before metastasis takes place or a complete obstruction occurs, operative procedure, as a rule, is very successful and the percentage of cures is high.

The following clinical cases are fairly typical and serve to illustrate the above points.

The first two cases are particularly interesting as the patients were brothers. One was operated on for carcinoma of the cecum on June 9, 1911, the other for carcinoma of the transverse colon on October 7, 1914. Each patient had an uneventful recovery, and at present seems in perfect health:

CASE 1.—G. D., farmer, aged 36, married; wife and children healthy.

Family history: Father living and healthy; mother died at the age of 37; three brothers and four sisters are living and healthy.

Personal history: The patient has always had good health. In the fall of 1908 he was kicked by a horse over the region of the appendix, with, apparently, no bad results at the time. About a year later he began to complain of disturbance in his stomach, of what he thought was a slight indigestion accompanied by constipation. He consulted his family physician, who diagnosed his trouble as indigestion; but he did not improve, and the constipation became more pronounced and the indigestion worse. He complained that gas in large quantities seemed to form in his stomach. By placing his hands across the lower part of abdomen and pressing upwards he would feel relieved.

He consulted me in November, 1910, giving the above history. After a careful physical examination I could find nothing aside from what seemed an intestinal indigestion, and I gave him instruction regarding diet and prescribed accordingly.

During the winter of 1910-'11 he visited friends in Ontario in the hope that with a change of surroundings and being away from work he would improve, but he did not; on the contrary he became weaker, and looked very anemic. He consulted a physician there, who did not make a positive diagnosis, but told him he had anemia, and prescribed accordingly.

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

He returned about March 1, 1911. Shortly after returning he was seized one night with violent pains in the abdomen. The family physician was called, and pain was relieved by a hypodermic and rectal injections. After the doctor had left for home, the patient, while feeling over his abdomen, located a lump in his right side, which continued to enlarge. About June 1 he was in St. Paul on business, and consulted a physician regarding this growth in his side. This physician told him he had a tumor of the appendix, and advised operation. On his return home he consulted me. I had not seen him since November, 1910.

The patient looked very cachectic, was obstinately constipated, had no appetite, and had lost weight, weighing 125 lbs. at the time.

On examination I found a tumor, freely movable, in the region of the appendix. I told him he probably had a malignant tumor, and advised immediate operation, which was done June 9, 1911.

The abdomen was opened over the most prominent part of the tumor, which, on examination, was found to involve the cecum and appendix. The tumor was freely movable; there were no adhesions to the surrounding tissue; the glands adjacent were not markedly enlarged, and the liver was normal.

The ascending colon was divided between clamps, and the distal end was invaginated. The ileum was next clamped and divided, and the diseased segment of intestine with the surrounding tissue was carefully removed, and the continuity of the intestinal lumen was established by terminolateral implantation of the ileum into the colon, using a medium-sized Murphy button.

The patient had an uneventful recovery, and has been in first-class health since. He weighs at present 150 pounds.

The specimen was sent to the Public Health Laboratory, and the following report was received:

"Pathological examination: The specimen consists of the lower portion of the cecum, with the attached appendix, and a short portion of the ileum. The specimen is flattened, and is, roughly, 10 cm. square, and 2 cm. thick. On the outside the specimen has quite an extensive layer of fat and a slight amount of fibrinous adhesions. Several firm nodules elevate the surface. One of these is oval in shape, 3 cm. long and 2 cm. in diameter. Upon section it has a pale opalescent color. Upon the inside of the specimen, the mucosa is pale in color. The surface is corrugated. In the center is a pinkish, grey-colored area, circular in outline, with elevated edges and sunken necrotic center. Its diameter is from 5 to 6 cm. This mass is firmly imbedded in surrounding tissue, and is immovable.

"Diagnosis: carcinoma."

CASE 2.—C. D., aged 33; weight, 145 lbs.; height, 5 ft. 8 in.; married; wife and children healthy.

Family history: Same as Case 1, except his brother had been operated on for cancer of the cecum on June 9, 1911.

In December, 1912, he consulted me, complaining of having an occasional cramp-like pain in the abdomen. This trouble apparently became quiescent. I did not see him again until March, 1914, when he consulted me regarding a diarrhea which was giving him considerable trouble, with occasionally severe cramps. He had lost weight slightly, weighing at this time 137 lbs. His appetite was good, but he seemed to lack strength. His

only complaint at this time was the diarrhea and cramps. The diarrhea gradually increased, and the pain became more persistent, especially when the stomach was empty. He stated that if he could take a little food every hour the cramps would not bother him. He made a practice of carrying some fruit or biscuits in his pocket in order to keep free from pain.

He lost weight and strength during the summer in the absence of any definite symptoms, all his trouble being confined to the bowels. I told him that he might be having the same condition developing as his brother, and suggested an exploratory incision. As he was very busy at the time he did not want that done. About September 1 on deep palpation I discovered a tumor just above the umbilicus. At this time and for some weeks preceding, the cramp-like pain had been almost constant. I advised operation at once, but it was not until October 7 that he could get ready. At that time he weighed 120 lbs., and looked anemic and weak.

A median incision was made just above and extending to the right of the umbilicus. The abdomen being opened a tumor of the transverse colon was easily demonstrated. About three inches of the colon were resected, and a side-to-side anastomosis made. He made a very satisfactory recovery, and began at once to improve, taking on weight rapidly. By January 7, 1915, he weighed 155 lbs., a gain of 35 lbs. in thirteen weeks. He has weighed 160 lbs. The following spring he began work on a farm, and has followed farming since, feeling strong and perfectly healthy, a typical picture of a sturdy farmer.

The specimen was sent to the Public Health Laboratory, and the following report was received:

"Pathological examination: The specimen consists of a portion of the large gut, 12 cm. in length. On sectioning, a small linear streak on the anterior wall of the gut is found apparently normal. Posterior mucous membrane shows two distinct ulcers separated by a strip of mucous membrane. Protruding from each ulcer can be seen cauliflower-like growths. The ulcer on the proximal end of the gut is larger and apparently the older. Each ulcer nearly surrounds the gut. Lengthwise of the gut the upper ulcer is 4 cm., and the lower one is 3 cm. in diameter. One gland was found enlarged in the mesentery.

"Diagnosis: carcinoma."

In comparing the symptoms in these brothers, we find that the first had a great deal of stomach trouble with constipation; the latter's only complaint was diarrhea and cramps. The first had pain (severe) at intervals; the other, for a few weeks previous to operation, had severe pain when his stomach was empty. Both lost weight and strength, and were more or less anemic, especially the first. There was nothing definite on which to base a diagnosis in either case until a tumor was discovered.

In contrast to these cases I wish to cite a couple others which are even more indefinite:

CASE 3.—M. A., a farmer, aged 47; weight, 187 lbs. He complained of constipation and some straining at stool for about a month, when he was seized with intense abdominal pain which was relieved by morphine.

The bowels moved freely the next day, following a dose of magnesium sulphate. Three days later pain of a less severe nature occurred, accompanied by stoppage of the bowels. His family physician used various methods in order to have a bowel movement, but without results. After eleven days he was brought to our office. On physical examination we found a strong, robust man who had never had any illness, and who had been in apparently good health until he was taken with acute abdominal pain, and obstruction of the bowels eleven days before. All organs seemed normal. There were no fever, no disturbance of the pulse, no abdominal tenderness, the abdomen slightly distended, and no nausea, or vomiting. In the examination per rectum a fullness could be felt high up in the left iliac fossa. We decided that the obstruction might be malignant, and advised operation.

A median incision was made. The bowels were found slightly distended, and at the middle third of the sigmoid a tumor mass was found, which was removed, and a lateral anastomosis was made. The patient was taken from the operating-room in good condition, but died in a few hours from apparent shock. (A post-mortem examination showed that the condition of the bowel at the site of operation was satisfactory; no hemorrhage or loosening of stitches was found.)

Although the operation of resection in this case was not difficult I think it would have been better had a colostomy been done at the time and resection at a later period. I believe the experience of most surgeons is that, where there has been a stoppage of the bowels for some time, it is best to do a colostomy and drain the bowels of their contents, and do a secondary operation for removing the tumor.

Specimen was sent to Public Health Laboratory, and the following report was made:

"Pathological examination: The specimen consists of a portion of the sigmoid colon about 6 cm. long with some surrounding tissue. The diameter of the colon at each end of the specimen is about 3 cm. In the center of the specimen the canal of the colon is constricted by a ring-shaped growth, the surface of which is deep-red and necrotic in places.

"Upon section, the thickened portion is found to contain a transparent gelatinous substance.

"Diagnosis: carcinoma."

CASE 4.—Mrs. R., aged 35, was brought to us in August, 1912. For the past year or more, she had been suffering from pain in the abdomen, accompanied by obstinate constipation. These were the only symptoms of which she complained, and nothing further could be found after very careful examination.

Her appetite was good, and she had not lost much weight or strength, but the pain of a cramp-like character was becoming so severe that it was almost unbearable.

An exploratory incision was advised, to which the patient consented. The abdomen was opened, and after a careful examination of the bowel a small annular stricture was located in the sigmoid, which was resected. The patient made a satisfactory recovery, and has had first-class health since the operation on August 7, 1912.

I selected these cases as I believe they are fairly typical of carcinoma of the colon as we find it.

The symptoms are vague and indefinite, and the most rigid examination will fail to give a definite clue to the diagnosis unless a tumor can be felt or until there is a complete obstruction. But in cases with some disturbance of the stomach, persistent or paroxysmal abdominal pain, and constipation, if we cannot make a positive diagnosis, it is best to advise and urge an exploratory incision in order to clear up the diagnosis; then, if a tumor or stricture is found and removed, the prognosis becomes very favorable.

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BRONCHOSCOPY AND ESOPHAGOSCOPY*

By ARCHIBALD D. McCANNEL, M.D., C.M., F.A.C.S.

MINOT, NORTH DAKOTA

I must confess some hesitancy about reading a paper before this Association on a subject which is comparatively new, and in which I have had so little experience, because only a very few, and those in the larger centers, have occasion to resort to these very valuable procedures.

The first work of direct examination of the esophagus was done by Bozina, as early as 1807, and the first cases of direct tracheoscopy were reported by Kirstein in 1897. In the same year

Killian reported the removal of a foreign body from the bronchus, and demonstrated the feasibility of upper bronchoscopy. Later he discovered lower bronchoscopy. Chevalier Jackson was one of the pioneers in this work in this country, and has designed many valuable instruments for use both in bronchoscopy and esophagoscopy.

The instruments in use today for trachea bronchoscopy and esophagoscopy may be divided into two classes: first, those without lighting apparatus, consisting of a tube into which light is projected from an independent source, usually a

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

head-lamp; second, in the other class the light is a part of the instrument, some having light at the distal end of the tube, such as the Jackson instruments, and in others, as the Brunings and Kahlers, the light is reflected from the proximal end of the instrument. Personally, I prefer the latter for several reasons. Bronchoscopy and esophagoscopy are used for the purpose of diagnosis, and operative and other treatment, as in the removal of foreign bodies and new growths from the trachea, bronchi, and esophagus. Mosher has recently done some very brilliant work in surgical treatment of esophageal diverticulum through the esophagoscope.

Anesthesia.—In adults an anesthetic is seldom necessary. A local anesthetic (twenty per cent cocaine) applied first to the glottis with a brush, is usually sufficient. It is best to apply it directly to the glottis, as the coughing following the direct application anesthetizes all the areas above; then in cases of bronchoscopy the posterior wall of bifurcation should be brushed with an eight per cent solution. In esophagoscopy local anesthesia is seldom necessary. If an anesthetic is used at all, it should be applied only to the laryngopharynx, never to the esophagus.

The greatest difficulty in the way of successful examination in the trachea and bronchi, is incomplete anesthesia. Time is lost, and the examination is rendered incomplete and unsatisfactory if the anesthesia is not profound. Another error to guard against, in passing the instrument, is not to pass it too deeply at first, and, as a consequence, to miss and to pass the epiglottis, striking the point of the instrument against the posterior pharyngeal wall. This produces an uncontrollable gagging, which often, for a day at least, makes further examination impossible.

General anesthesia is often necessary in small children, especially in bronchoscopy; and, if time will permit, they should be prepared for the anesthetic, as for any other operation. The same holds in general as in local anesthesia,—that is, the anesthesia should be profound.

Until the advent of tracheoscopy and bronchoscopy, the removal of a foreign body from the trachea was accomplished by performing tracheotomy. When a loose body like a seed was playing up and down the trachea, seeking to escape, it was often blown violently out of the wound by the first spasmodic expiration, which was caused by entering the trachea. Such an outcome was dramatic and satisfactory. If, however, the foreign body was not free in the trachea, but was impacted or was of a different nature

from a seed, the old practice was to introduce forceps blindly and fish for it. Many successful extractions have been performed in this manner. Many times, however,—and the records are woefully incomplete as to how many times,—the attempt at blind extraction has failed, and has caused the death of the patient.

SYMPTOMS AND DIAGNOSIS OF A FOREIGN BODY IN THE AIR-PASSAGES

Cough.—Cough is the most constant symptom of a foreign body in the air-passages. It appears as an immediate symptom in the effort to prevent the entrance of the body at the laryngeal orifice, and, later, in more or less paroxysmal efforts, to rid the air-passages. Still later, cough is present from the inflammatory reaction to the irritating presence of the invader. This later cough is more apt to be constant than that which occurs earlier. The early coughing is usually paroxysmal, some minutes or hours elapsing between the seizures. These intervals may be entirely quiet, but are often attended with an occasional cough, which interrupts the sleep of exhaustion.

Dyspnea.—Dyspnea is a very frequent symptom. It is usually inspiratory in character, but may be expiratory, or both. It may be due to actual obstruction to the passage of air because of the presence of the foreign substance itself, or because of the bulk of the body plus the resultant swelling and secretions. The dyspnea is always worse during the paroxysms of coughing, at which times it may reach unconsciousness from carbonic-acid narcosis.

Temperature.—The temperature is usually elevated, which is often misleading, and in cases of doubtful diagnosis it will be erroneously advanced as negative evidence, and urged against a diagnosis of a foreign body. It may be, in the early stages, irritative. Later, it is toxemic, due to septic absorption from a localized inflammatory area. It may be due to the complications, as pneumonia bronchitis.

Pain.—Pain is often noted, but it is apt to be vaguely localized, and may be due to tissue soreness due to violent coughing.

The Röntgen Ray.—This is of great value in cases in which there is hope of the foreign body showing opacity to the ray. If there is urgent dyspnea, there should be no delay, not only on account of the urgency, but because the dyspnea itself is an indication that the foreign body is in the larynx or trachea. Inorganic substances, other than metal, such as pebbles, toy marbles, glass, etc., usually show well. Vegetable sub-

stances, as a rule, do not show well. Various nut kernels within the thorax are not easy to demonstrate.

Physical Signs.—These are of value often in indicating which side the foreign body is on, especially in a case of a negative radiograph. This is the important part of the diagnosis, often saving time by indicating the side to search first.

Indications.—The danger to which a patient is exposed in leaving a foreign body in place, is vastly greater than the danger to which he is exposed by the performance of bronchoscopy. The great danger incurred by a patient with a foreign body in the lungs, is pneumonia, or abscess and gangrene of the lungs. However, there are many cases reported in the literature of foreign bodies which have remained in the lungs a long time, whose presence was known or unknown, and which have been finally coughed out. Should the patient escape septic pneumonia, and the foreign body remains in the lungs, Killian is authority for the statement that such cases not infrequently terminate in tuberculosis.

Inorganic substances macerate and decay. When this happens, they may be coughed out. Seeds, if uncooked, do not macerate, but swell on absorbing moisture and become firmly fixed. Peanuts, in this country at least, have proved to be very fatal foreign bodies to lodge in the lungs. If a foreign body is to be coughed up, this generally occurs in the first twenty-four hours. Jackson sums up the matter fairly when he says, "We do full justice to our patients when we tell them that, while a foreign body may be coughed up, the chances of this are remote, and it is very dangerous to wait; and, further, the difficulty of removal increases with each hour that the body is allowed to remain."

Roe collected 1,417 cases of foreign body in the air-passages. In 470 cases extractions were not attempted, and there were over 400 deaths,—that is, the mortality was 27 per cent. This is to be compared with 94 cases of upper and lower bronchoscopy reported by Jackson in which the mortality was 3.2 per cent.

Suspension Laryngoscopy.—About 1911 Killian introduced suspension laryngoscopy, and shortly afterwards his perfected instruments began to be used extensively. The underlying principle of the procedure is the transference of the weight of the patient's head from the hand of the examiner to the handle of the speculum. This gives the physician both hands with which to work.

Dr. Robert C. Lynch, of New Orleans, has done considerable work in this line in this country, and has made several changes in the Killian suspension apparatus and instruments. Although this method sounds ideal, it still has its limitations. In the first place the technic and adjustment of the apparatus are very exacting, although ideal in certain cases, as in babies, where it permits of the careful passage of the tube beyond the vocal cords and subglottic space, which it is very necessary not to traumatize. It also facilitates the introduction of the esophagoscope in certain cases; but, once introduced, the patient should be relieved from the suspension apparatus so that subsequent manipulation will not be interfered with.

REPORT OF CASES

CASE 1.—W. H., aged 5 years, referred by Dr. Erenfeldt. Ten days before while eating peanuts, he had a choking spell lasting a few moments, and was taken to a physician, and tracheotomy was performed. When I saw her first, nine days later, the tracheotomy wound was open, with pus secretion, labored breathing, and interstitial emphysema, involving the neck, chest, and upper abdomen. Temperature 102.6°; respiration, 55; pulse, 100.

Physical examination: Breathing diminished throughout the right chest; marked auscultatory signs of bronchitis on the right; moderate on the left. The radiograph revealed slight cloudiness over the right bronchus. Under ether anesthesia, lower bronchoscopy found the half of a peanut in the right bronchus, about one inch from the bifurcation. The tracheotomy wound closed in about ten days.

CASE 2.—Bone in the Bifurcation of the Trachea.—Mrs. S., aged 30. Dr. Pence was called to see a woman who was choking from having swallowed a piece of pork chop bone. She was seven and one-half months pregnant, and in great dyspnea. The glottis was cocaineized; a 12 mm. tube was passed, and the bone was found at the bifurcation. In showing it to Dr. Pence, I must have made undue pressure as the patient had a spasmodic cough, expelling the bone through the tube, breaking the mirror of the instrument.

CASE 3.—Fish Bone.—Mrs. K., aged 55, had a fish-bone in her throat for twelve hours, causing considerable irritation on swallowing. A spatula was passed, and the bone was found in the left pyriform sinus.

CASE 4.—Baby J. F., aged six months, had difficulty in breathing and spasmodic coughing for the past thirty hours. No history of foreign body. A bronchoscope was passed, and a rivet located in the trachea about three-quarters of an inch below the vocal chords. The base of the rivet lay obliquely with the stem pointing upward and posteriorly. I was unable to remove it as the forceps would slip off from the tapering stem, but with a hook I was able to rotate it, and it was then easily removed with the forceps.

CASE 5.—Head of Wheat in the Bronchi.—H. C., ten months old. Eighteen hours previously child was playing on the floor and suddenly had choking spell, followed by very difficult breathing. The family

physician was called and tracheotomy performed with very little relief. When I saw the child it was very dyspneic. Lower bronchoscopy performed at once and we found, projecting from left bronchus at bifurcation, a large grain of wheat with hulls attached. This was removed and child had immediate relief. I thought the cause of the trouble was removed. Child was very comfortable for eighteen hours when she again became dyspneic and lower bronchoscopy was again resorted to, left bronchus explored, nothing but inspissated mucus was found. I then explored the right bronchus and found, one inch below bifurcation, part of a head of wheat, upon removal of which all dyspnea disappeared for about twelve hours, when dyspnea again returned and became so alarming that lower bronchoscopy was again resorted to, nothing was found except tenacious inspissated mucus, which formed a mass almost completely filling bifurcation. The removal of this tenacious inspissated mucus had to be resorted to at intervals of from six to eight hours for the next six days. I have been unable to find anything in the literature similar to this mentioned, as a complication of bronchoscopy.

CASE 6.—Jackstone in the Esophagus.—The patient had a sudden choking spell, and was rushed to my office. The child seemed in great pain, but there was only slight dyspnea. The spatula was passed, and the jackstone was located at the entrance of the esophagus, one arm having entered and one arm was just behind the left arytenoid eminence. This was easily removed with forceps.

CASE 7.—C. L., aged 4 years. On July 22, Dr. A. J. McCannel was consulted, at which time child had mild bronchopneumonia. The patient did not return to the doctor until August 17, when it came with a history of having had a choking spell two days before. The temperature was 100°, the pulse, 96, and respiration, 30, with physical signs of a bronchitis. As the patient was not improving, having coughing spells still similar to whooping-cough, with two and three spasms daily, on September 18 an x-ray was taken, and a piece of nail was found low in the left lung. By oral bronchoscopy under ether anesthesia, the nail was found below the second bifurcation of the left bronchus. For ten days afterward the patient had a temperature ranging from 99° to 102°, but improved rapidly and is now in perfect health.

I have failed to remove two foreign bodies, both in the esophagus, one a quarter lodged in the esophagus at the level of the bifurcation of the trachea, which was located, and, upon seizing it with the forceps, it was dislodged and passed into the stomach. Three days later the coin was passed by the bowel.

The other was a safety-pin in the esophagus of a nine-months-old child. The pin was open, and the point up. It was located near the cardia; and, upon manipulating to get the forceps through the ring, the pin disappeared, and the radiograph showed it in the stomach. As this was only three days ago, I am unable to report the subsequent history except that the child has no symptoms, and the pin is still in the stomach.

DISCUSSION

DR. G. GOLSETH (Jamestown, N. D.): I enjoyed Dr. McCannel's paper very much. As he said, in the smaller cities we do not have very many cases to deal with, but at the same time when we get these cases we have to be in a position to do the work. It is also valuable in diagnosis, especially of children, and in operations on the larynx. I wish to congratulate Dr. McCannel on this paper because it is of great importance that there be somebody in the locality who can do this kind of work, and the sooner we get these cases, the better.

DR. McCANNEL (closing): I did not think I had anything further to add, but it has just occurred to me that the general practitioner might like to know what is best for him to do in these cases of marked dyspnea caused by a foreign body, and whether tracheotomy would be indicated.

I think that any practitioner should make a thorough examination as far as the vocal cords, and see if a foreign body is in that region, and, if there is one, and he is unable to remove it, then tracheotomy is going to give immediate and good results, but, if the foreign body is lower down than the glottis, in the majority of cases tracheotomy is of no avail. However, I do not think it is contra-indicated, as it is giving a patient a chance still.

ORATION IN MEDICINE*

BY F. R. SMYTH, M. D.

BISMARCK, NORTH DAKOTA

It is a far cry from the primitive caveman, who, no doubt, in common with all humanity, was subject to diseases and afflictions, to the present period of civilization, with its high standards of medical science and practice.

Although the way has been long and beset with many trials and difficulties it has always led for-

ward; and even in the darkest ages enthusiasts have been found advancing new theories of the causes of disease and the methods to be adopted to overcome the occult agencies. It is little wonder that, without the means of scientific investigation, all natural phenomena, including the different manifestations of disease, were considered due to the machinations of malevolent spirits.

*Read at the 29th annual meeting of the North Dakota State Medical Association at Devils Lake, May 10 and 11, 1916.

Naturally enough, the remedies to be used for cure or prevention of disease partook as much of the supernatural as the agencies supposed to cause it. Weird rites to propitiate the offended spirits, spells, and sorcery were the weapons in common use to ward off impending attacks.

To this day we find trace of this paganism in the suggestive psychotherapeutics and hysterical appeals that an individual with lung tissue almost destroyed by tuberculosis, or emaciated and devitalised by the lack of nutrition and cachexia due to gastric carcinoma, is simply the victim of self-delusion, and that he would be perfectly well if he would only believe that there is no such thing as disease.

As war gave the first incentive to scientific medicine, it is only fitting that the great healing art should have reached the height of its glory during the greatest war that was ever waged.

Ambrose Paré, in the sixteenth century, on the battle-fields of France, revolutionized methods of treatment, and it was said of him that "he did not hesitate to thrust aside ignorance or superstition if it stood in his way." The use of the ligature to control hemorrhage in amputation, the mercurial treatment of syphilis, at that time the scourge of armies, and the conservative treatment of gunshot wounds are all methods which are being followed today on the same battle-grounds but on bloodier fields than Paré ever dreamt of.

Instead of one Paré we have now thousands and tens of thousands of physicians thrusting aside old methods and grappling with new problems. Who has not seen pictures of Paré at work on the field with caldrons of boiling oil, to dip the stumps of newly amputated limbs in, and assistants carrying red-hot irons to sear and control the hemorrhage from external wounds.

But does this compare with the horrors to be seen and with the effects of which physicians have to contend on the same fields where Paré gained his reputation? Today can be seen, not only boiling, but burning, oil being deluged on thousands of men; clouds of noxious, suffocating gases deliberately directed on masses of human beings to stupify and kill; and men living in trenches without the ordinary provisions of decency. There is no cessation of operations or

truces to recover the wounded or bury the dead. No, the living have to risk their lives in "no man's land" to bring back the dead and mutilated bodies of their comrades. The medical corps has to pick up wounded directly under the fire of the enemy, and bear them back to safety at the risk of their own lives.

Nor is the risk by any means an imaginary one. A German medical journal gives the number of physicians who have been killed at the front, up to December, 1916, as 395; 900 wounded; and 200 taken prisoners. The proportions in other armies are probably just as high.

Notwithstanding the risk and notwithstanding the lack of excitement that attends the work of the physician on active service, it is something to be proud of that medical men everywhere are offering their services, and that those who from any cause are debarred from active service, are vying with each other in caring for the work of their more fortunate brothers.

Fortunate, indeed, for it is a great privilege to every citizen to do his "bit" for his country, and doubly fortunate for those who can be where their direct services to the men who have fought and bled for us, can be rendered.

Thank God that when volunteers for a typhus epidemic in Serbia, cholera in Russia or Austria, camps of sick or wounded in central or Allied countries are needed, there you find American physicians responding—and let us emphasize *physicians*. Where do you find corps of the numerous members of fads and cults who haunt our legislatures seeking recognition on the ground that the regular members of the medical profession are grafters and robbers banded to delude and rob the unfortunate sick? Yes, where? Surely, not on the battle-field daring the risks of wounds or death to help the wounded heroes. Surely, not where pestilence and infection takes their toll of victims without regard to age, sex, or profession.

Let us, then, be up and doing, and gladly furnish the 25,000 physicians said to be needed for the expedition abroad, and gladly, if necessary, give our lives in the service of humanity, rejoicing that, in the great cataclysm that involves the whole world, Medicine has found its own.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

NOVEMBER 1, 1917

THE MINNESOTA STATE MEDICAL ASSOCIATION MEETING

In spite of the additional burdens that have been forced upon the medical profession during the past few months, the annual meeting of the State Medical Association at St. Paul was well attended, and more than 375 physicians registered. Of course, this means that a large percentage of the country members were not able to be there, but the attendance was made up from the Twin Cities.

The program was very well arranged. The Section on Medicine had a good attendance throughout its sessions, but, very naturally, the Section on Surgery was more largely attended.

Dr. Archibald Church, of Chicago, delivered a very interesting address on the "Social Value of Cranks," as did Dr. Jason Samuel Mixter, who gave the Oration in Surgery. Many important papers were read before both the Section on Medicine and the Section on Surgery. There was scarcely a paper on the program that was not of general interest, and the discussions were rather better than usual. The symposium on "Cerebral Spinal Meningitis" was particularly commendable, as was the symposium on "Diseases of the Bone," which included fractures and pathology. Then, too, on the last day, papers on

genito-urinary surgery were heard by many and were freely discussed.

Dr. C. Eugene Riggs and Dr. Arthur A. Law, who presided for their respective Sections, did much to make the whole meeting a very successful one. It is to be noted that the medical men from Fort Snelling participated, not only in the discussions, but in the presentation of papers; and these men in khaki presented a new feature to the Association, showing the interest of outside men in our State Medical Association, and also showing to the members of the Association the new form of life which many of them have already adopted.

The banquet on Thursday night was a typical St. Paul affair, and was hugely enjoyed.

The transactions of the meeting will appear in our next issue.

PUBLIC HEALTH WEEK IN MINNEAPOLIS

When the various agencies interested in public health,—medical societies, dental societies, boards of health, private committees, and the other groups,—learn to unite upon a common program, and to present a solid front to the enemy, then, and only then, will big results be accomplished. For two years such a plan has been successfully operated in Minneapolis in the promoting of an intensive health campaign of one week's duration.

This year some thirty-five groups, such as the Hennepin County Medical Society, the Civic and Commerce Association, the Anti-Tuberculosis Committee, the Dental Society, the Woman's Club, the Y. M. C. A., the Building Trades Council, etc., formed a central organization with a chairman, secretary, and an executive committee. It was rightly felt that in order to focus the attention of the public upon health matters it would be necessary to launch a movement of sufficient scope to demand the attention of the public. That this was done successfully is shown by the fact that the newspapers gave fifty-one columns of space to the movement. A number of plans were made for the week beginning with a health parade under the direction of Mrs. S. T. McKnight. This parade consisted of floats, some nine pieces of music, school children in costume, and general marchers. It is estimated that there were about five thousand in line.

The first two days of the week, October 8 and 9, were given over to the Mississippi Valley Conference on Tuberculosis. Tuesday evening, October 9, a mass meeting was held in the Audi-

torium at which the principal talk was given by Dr. Frederick L. Hoffman, statistician of the Prudential Life Insurance Company, on Cancer-Control. About a hundred meetings were scheduled during the week in work-shops, schools, before women's clubs, and other organizations. It is estimated that forty-five thousand persons heard talks on health.

Some of the other results accomplished by such a community campaign were the showing of health films to nearly seventy thousand persons, and the request for other talks to be given at some other time. The committee in charge estimated one hundred fifty thousand were reached directly by this campaign.

Because of the success of such a movement along health lines it has been suggested that, not only a week's effort, but a year's effort, be made not only to educate the public to right manners of living, but also to arouse in them a demand for adequate legislation and funds to take care of the situation.

THE MINNESOTA STATE SANITARY CONFERENCE

The Minnesota State Sanitary Conference held its annual meeting in the St. Paul Hotel on Wednesday, October 10. There were present about seventy-five county and municipal health officers. The program was in the nature of an open discussion on a number of topics which had been suggested by various health officers.

The Conference, which had not held regular meetings for a couple of years, was reorganized substantially according to the terms of its old constitution. Dr. C. L. Scofield, of Benson, was elected president, Dr. G. F. Swinnerton, of International Falls, vice-president, and Dr. H. M. Bracken, of the State Board of Health, secretary-treasurer.

The discussions were lively and interesting, and, on the whole, the Conference was the most successful gathering of its kind that has been held in this state, the informality and the general participation in the discussions making it so.

MISSISSIPPI VALLEY CONFERENCE ON TUBERCULOSIS

The fifth Mississippi Valley Conference on Tuberculosis recently held in the Twin Cities stands prominently forth as a milestone in the progress of the antituberculosis campaign in this community. This organization is a sectional

meeting of the National Association for the Study and Prevention of Tuberculosis, and includes in its territory Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. Representatives of all these states, except Kentucky and Kansas, to the number of almost three hundred, were in attendance at the three days' meeting. British Columbia and New York were also represented. The President of the National Association was scheduled to appear on the program, but at the last moment a railroad wreck prevented his coming. As one would naturally expect, Minnesota was the best represented of the states, there being almost one hundred and fifty in attendance for the state.

What the Conference means to the workers in this field of public health may be better understood if we note the object of the Conference, which has been set forth as follows:

To bring about a closer relationship between anti-tuberculosis agencies in the Mississippi Valley and to provide for an interchange of ideas and experiences.

To strengthen and extend the work of the National Association for the Study and Prevention of Tuberculosis.

To arouse the people of this Valley to the need for concerted action, both public and private, against tuberculosis and to effect closer co-operation between anti-tuberculosis societies and other health agencies.

A peculiar feature of this Conference was that it was in reality a Twin City gathering. A local committee of arrangements, made up of St. Paul and Minneapolis workers, planned details of entertainment and meeting-places resulting in sessions of one and one-half days at the Hotel Radisson in Minneapolis, one-half day at the University Medical School, and one day at the St. Paul Hotel in St. Paul. Transportation by automobile made it possible to carry out successfully this varied program of meeting-places. This getting together of the public-health workers of St. Paul and Minneapolis is a good thing and this recent experience has helped to a much better understanding of the problems of the other fellow in the neighboring city.

The program included discussions of problems of interest to field nurses, institutional nurses, secretaries of antituberculosis organizations, and supervisors of school children, as well as to physicians. It took up the problems of the rural community and of the small towns, the construction of sanatoria, the relation of tuberculosis to other diseases in public-health work, the need of clinics for teaching this disease in medical colleges, how to stimulate sentiment for county public-health

nursing, the teaching of practical hygiene to school children, and kindred topics.

It is interesting to note that more than half of the participants in the program were medical men.

An unusually good medical session was held at the University Medical School, when papers were presented followed by valuable discussion on the place of the x-ray in the diagnosis of tuberculosis and on the importance of properly organized dispensaries. There were also practical demonstrations on the examination for incipient tuberculosis and on the value of artificial pneumothorax, for which demonstration patients were provided by local institutions.

The program was, from first to last, intensive, continuing all day and into the evening, being broken only by a social gathering late the first evening and by the mass meeting at the Minneapolis Auditorium the second evening. At this meeting a prominent member of the Conference gave the address on tuberculosis for which the president of the National Association was scheduled. The interest of the attendants on the sessions was held throughout the last day in St. Paul, probably partly at least because of the nature of the program of the last afternoon. The tuberculosis problems of the war was the subject, and included a valuable review of the situation by the secretary of the National Association.

Many of the workers throughout the Valley who have previously attended these conferences, who were prevented from attending this year on account of the war conditions, some having gone into the Federal service and others having double duty at home. The antituberculosis workers feel keenly their responsibility, not only to do their part in carrying on the public-health work in their home communities, but, so far as is possible, to have a share in the preventive work that the Government is carrying on at present. In the words of the president of the Conference: "The influence of these conferences has not been limited to the problem of tuberculosis, but has advanced the whole public-health cause in this country. This fact is being most clearly demonstrated at the present time by the pains-taking care that is being taken for the health of the soldiers in the organization of our great army."

This meeting of the Conference, in common with previous meetings, was most successful in bringing together the antituberculosis workers of these states for mutual inspiration and assistance, and in spreading throughout this section the educational influence of such a gathering.

ANNUAL MEETING OF THE MINNESOTA GRADUATE NURSES

The fourteenth annual meeting of the Minnesota State Graduate Nurses' Association will be long remembered as one of the most vital and interesting business meetings of that organization.

Never has there been a time in the history of modern nursing when so many things of vital importance are being squarely put up to the nurse. She is sorely needed on the battle-fields of Europe; and, in ministering to the women and children of the devastated regions, it takes very little imagination to picture what she may be to those suffering peoples.

The key-note of the meeting was perhaps a fine appreciation of the large responsibilities confronting the nurse of today; a keen earnestness in wishing to meet these obligations; and a firm purpose to stand in readiness for whatever service can best be rendered by the individual. One prominent worker has said that perhaps the highest test of patriotism at this time may be in sticking to one's own job, and doing it a little harder.

The Red Cross has called many hundreds of nurses under its banners, and will call many more; and enthusiastic young women are responding splendidly. Older women are working hard in rural communities, on local committees of Red Cross Nursing Service, and in surgical-dressings classes.

Because of the steady depletion of the ranks, which will probably increase as time goes on, it is necessary to know where every available nurse is, and to what branch of the service she will best qualify. To this end a survey is being made which will give the desired information.

Private and public-health nursing was very earnestly discussed, and the need for more nurses in our own rural communities was considered. The demand for properly equipped young women for the smaller communities is far in excess of the supply. This can be remedied only by enlisting the interest of nurses in public-health work, and by encouraging them to fit themselves for this branch of the service.

The present call to service strikes a very high note. The responsibilities are great, but of far-exceeding greatness is the splendid privilege of ministering to mankind at this time of world-wide suffering and sacrifice.

The nurses attended the sessions of the Mississippi Valley Conference on Tuberculosis being held in the Twin Cities at that time.

MISCELLANY

YOUNG PHYSICIANS, *YOUR OPPORTUNITY*

Never again in the history of medicine in this country will such an opportunity be afforded you to serve your country as well as the best interest of yourself.

The experience which you will gain by being commissioned in the Medical Reserve Corps, and seeing active service, will be worth more to you in a professional way than you could acquire in years of practice in civil life.

The pay granted to officers in the Medical Reserve Corps is sufficient not only to cover all needs, but to enable you to lay aside a comfortable balance, and while the older men in the profession have come forward, it is to the younger men that the greatest benefits accrue.

The experience will prove broadening both professionally and mentally. With this experience and the thought that you have served your country in time of need, you will return to civil life and receive the further benefits from your patients, friends and acquaintances, always accorded to one who has been so prominently individualized as this opportunity will afford you.

NEWS ITEMS

Plans for a base hospital at Fort Snelling have been abandoned.

Dr. C. J. Maercklein has moved from Gackle, N. D., to Bowman, N. D.

Dr. F. G. Hubbard has moved from Cayuga, N. D., to Cogswell, N. D.

Dr. F. J. Souba, of Eveleth, was married last month to Miss Bertha C. Wiley, also of Eveleth.

Dr. Henry L. Klein, of St. Paul, was married last month to Miss Josephine Edgerton, also of St. Paul.

The citizens of Willmar have begun an active campaign to raise \$75,000 for a hospital, and they will succeed.

"Tag Day" in Minneapolis last month broke the records for the city, giving the Visiting Nurses \$30,039.

Dr. W. F. Maertz, who has been located for some time in Lidgerwood, N. D., will move to Mankato, Minn.

Dr. C. A. Fjelstad has moved from Red Wing to Austin, and become associated with Drs. C. A. and O. H. Hegge.

Dr. L. B. Wilson, of the Mayo Clinic, has been appointed a director of the Mayo Foundation by the Board of Regents.

Dr. J. A. Sanford, of Farmington, has purchased a commodious residence building which he will remodel for hospital use.

Dr. W. L. Beebe, of St. Paul, was elected president, and Dr. E. L. Tuohy, of Duluth, secretary, of the Minnesota Public Health Association at its recent annual meeting.

The Sixth District Society of North Dakota met last month at Bismarck. Dr. E. P. Quain gave an account of the work of the training-camp at Fort Harrison.

Dr. H. E. Sutton, of Cold Springs, a son of Dr. C. A. Sutton, of St. Cloud, died last month at the age of 41. He was a graduate of the University of Minnesota.

Dr. E. W. Cowan, of North St. Paul, has been appointed official physician of Ramsey County, and is the first official of the kind appointed in the county for ten years.

The U. S. Civil Service Commission at Washington, D. C., requests us to announce that there is an urgent war need of the Government for stenographers and typewriters.

The Nurses' Training School, of St. John's Hospital, St. Paul, graduated a class of ten nurses last week. The name of Miss May Smith, who was drowned in Lake Phalen in July, was in the list.

Dr. W. G. Cogswell, secretary of the State Board of Health of Montana, has confirmed the diagnosis of leprosy in a patient who is a Montana senator. The patient may be sent to a leprosarium.

Mr. G. H. Murray, formerly Superintendent of the More Hospital, Eveleth, and first vice-president of the Minnesota Hospital Association, has volunteered for war service, and is now First Lieutenant of Company E, 352 Inf., Camp Dodge, Iowa.

Both Secretary Rowe, of the North Dakota State Medical Association, and THE JOURNAL-LANCET desire the names of all North Dakota physicians who are now absent in active army training work. The list given below in this department, is far from complete.

Dr. F. A. Spafford, of Flandreau, S. D., chairman of the South Dakota committee to secure doctors for the medical corps, says 12 per cent of the physicians of South Dakota have been accepted for service. The percentage has been reached by only a few states, and not materially surpassed by any.

The Southern Minnesota Medical Association will hold its annual meeting at Mankato on November 26 and 27. The program of the meeting will be published in our next issue.

The Medical School of the University of Minnesota has tendered its services to the Government for training the hospital units that may be at Fort Snelling this winter. Temporary buildings would be erected, if necessary, on the Campus. The navy hospital men at the Dunwoody Institute will be given a four-months course by the medical school.

At the meeting of the St. Louis County Society last week, the following officers were elected: President, Dr. A. N. Collins, Duluth; vice-president, Dr. I. J. Crowe, Virginia; secretary-treasurer, Dr. C. H. Schroeder, Duluth. Drs. N. H. Gillespie, C. H. Taylor, and J. R. Kuth were appointed a committee on arrangements for the State Association meeting next year.

The autumn conference of the Minnesota Hospital Association, intended to be held in Minneapolis, November 8 and 9, has been postponed, and will be combined with the annual meeting to be held next April. It was found that the number of hospital workers who have left the state for war duties seriously disorganized the program that had been planned. The date of the annual meeting and spring conference will be announced after the meeting of the executive committee early in November.

The fourteenth annual meeting of The Minnesota State Graduate Nurses Association was held on the morning of October 9, in the Wilder Charity Building, St. Paul. The order of business was mainly the reports of committees, instead of papers. The following officers were elected for the current year: President, Miss Minnie F. Paterson; secretary, Miss Louise M. Powell; directors, Miss Esther Porter, Miss Ruth Martin, Miss Louise Christianson, Miss Hannah Swensen, Miss Edith P. Rommel, and Miss Delia O'Brien.

The following new officers and members of committees were elected at the annual meeting of the Minnesota State Medical Association: President, Dr. Arthur J. Gillette, St. Paul; first vice-president, Dr. O. C. Strickler, New Ulm; second vice-president, Dr. E. H. Frost, Willmar; third vice-president, Dr. M. J. Lynch, Minneapolis; member of the house of delegates of the A. M. A., Dr. Geo. D. Head, Minneapolis; and alternate of the same, Dr. J. W. Bell, Minneapolis. The members of committees to be appointed

by the president of the Association have not been named. The transactions of the annual meeting will be published in these columns in our next issue.

Dr. H. J. Rowe, secretary of the North Dakota State Medical Association, furnishes us the following partial list of the name, rank, and location of North Dakota physicians now at the various army camps: At *Fort Riley, Kansas*, Arnson, J. O., 1st Lieut., Bismarck; Brimi, Carl L., 1st Lieut., Cooperstown; Nachtwey, A. P., 1st Lieut., Dickinson; Nickerson, B. S., Capt., Mandan; Strong, Thos. J., 1st Lieut., Williston; Brenckle, J. F., 1st Lieut., Kulm; Rice, P. F., Capt., Solen; Kirkham, Judd H., 1st Lieut., Langdon; Hillis, S. J., 1st Lieut., Berthold; Pryse, Roscoe C., 1st Lieut., Dawson; Meland, O. N., 1st Lieut., Grand Forks; Livingston, Jas. W., 1st Lieut., Valley City; Baldwin, Wm. P., 1st Lieut., Casselton; Ginsberg, Wm., 1st Lieut., Omamee; Jackman, J. E., 1st Lieut., Minot. At *Kansas City, Mo.*, Eastman, L. G., 1st Lieut., Hazen. At *Camp Hancock, Ga.*, Larabee, S. G., 1st Lieut., Mandan. At *Fort Robinson, Neb.*, Mella, Hugo, 1st Lieut., Bismarck. At *Philadelphia, Pa.*, Robert D. Campbell, Capt., Grand Forks. At *Camp Dix, N. J.*, Hillis, S. J., 1st Lieut., Berthold. At *Fort Benjamin Harris, Ind.*, Aylen, Jas. P., Capt., Fargo. At *Camp Cody, New Mexico*, O'Brien, W. P., 1st Lieut., Ege-land, and Swenson, A. W., 1st Lieut., Bisbee. At *Fort Dodge, Iowa*, Mizener, Mark, 1st Lieut., Bowman. In *England*, Halgren, John, 1st Lieut., Bismarck. In *Honolulu*, McCannel, A. J., Capt., Minot, and Brigham, F. O., 1st Lieut., Stanley. At *Washington, D. C.*, Campbell, T. R., 1st Lieut., Arthur. At *Sparta, Wis.*, Reedy, P. G., 1st Lieut., Regan. At *Charlotte, N. C.* (with the National Guard), Wheelon, Frank E., Major, Minot; Graham, M. P., Lieut., Carrington; McLean, N., 1st Lieut., Kenmare; Hunt, C. E., Major, Valley City; Duncan, C. B., 1st Lieut., Sanish. With the *Field Hospital, N. D. N. G.*, Swarthout, E. F., 1st Lieut., Sykeston.

LOCUM TENENS WANTED

A young doctor to take my practice for four weeks in a country town about 40 miles from the Twin Cities. Scandinavian or German preferred. Address 594, care of this office.

OFFICE POSITIONS WANTED

Several young women without experience in that line of work desire positions in physicians' offices. One of the applicants can speak French and German. Address 598, care of this office.

NURSE WANTS OFFICE POSITION

A registered nurse with five years' experience and excellent references, wishes a position as assistant in a doctor's office. Enquire of Della G. Drips, 7034 Delaware St. S. E. Phone, East 5169.

PHYSICIAN WANTED AT ONCE

In a good county seat town of 800 in North Dakota. Only doctor in town. For period of war, or will sell practice. Have joined the Medical Reserve. Address 591, care of this office.

DRUG STORE FOR SALE

The only drug store in town of about 400; well settled farming country, in southeastern South Dakota. Good opening for a doctor with \$4,000 cash. No doctor in town. Address 586, care of this office.

LOCATION WANTED

Position desired in the office of some physician going into the army, or as assistant to some surgeon with large practice, by an experienced M. D., familiar with microscopy, x-ray work, and general surgery. Address 580, care of this office.

LOCUM TENENS WANTED

A \$5,000 unopposed practice in town of 400 in Minnesota. Electric light and waterworks. Am commissioned in the army. Can have what you make. Nothing to buy. Must sign contract to leave upon my discharge. Address 590, care of this office.

PRACTICE FOR SALE

An unopposed practice in village of 400 in western Minnesota for sale to purchaser of office equipment, \$350. Practice has averaged \$4,000 for many years without surgery. Collections, 95 per cent. Health reason for leaving. Address 585, care of this office.

SCHEIDEL INDUCTION COIL FOR SALE AT BARGAIN

Electrolytic and mercury interrupters, 3 meters; 4XR tubes; compressor apparatus; Leucodescent lamp; wall plate; high-frequency apparatus; large number of H. F. tubes; office scales; hand centrifuge. Owner retiring from business. Address 596, care of this office.

POSITION WANTED

Am 31 years old, have had two years' hospital and four years' general practice. Am married and have one child. Position desired with surgeon or busy practitioner. Will consider locum tenens. Registered in Minnesota and Wisconsin. Address 587, care of this office.

PRACTICE OFFERED

I will give free a \$4,000 practice in town of 400, in southeast South Dakota to physician who buys my office equipment, amounting to about \$300. Mixed population. Thrifty farmers in a good country. Money from the start. No deadbeats. Must leave by November 1st. Address 592, care of this office.

POSITION WANTED

Am 43 years old, have had one year's hospital experience, two years of postgraduate work, and eighteen years' private practice. Am married and have family consisting of one child. American born. Will consider partnership. Registered in North Dakota, South Dakota, and Iowa. Address 569, care of this office.

POSITION WANTED

Assistantship or locum tenens opening desired. Minnesota preferred; would consider North Dakota. Norwegian, licensed in Minnesota. City of 2,000 or over preferred. Do eye, ear, nose, and throat work, and refraction, as well as general work. Aged 37, active, and willing, and not subject to draft. Write fully as to what you have to offer. Address 570, care of this office.

PRACTICE FOR SALE

A practice paying over \$4,500; in a North Dakota town of 500 population, 99 per cent Scandinavians; railroad division point; railroad appointment with pass; good roads, and very large territory; free office over drug store; opposition very light. Practice goes with a very good home for \$2,800—\$1,000 down, balance on suitable terms. Going to specialize. Act at once as this notice may not appear again. Address 597, care of this office.

PRACTICE FOR SALE

Unopposed \$4,500 (or better) practice in thriving town of 500; located in richest county of state; large territory (14, 16, 18 miles); good roads; collections, 98 per cent; railroad division; railroad appointment with pass; insurance appointments transferable; free office rent. Will sell for price of residence, \$2,800; \$1,000 down, balance on suitable terms. Reason for selling, specializing. Answer quickly. Address 593, care of this office.

LOCATION OR PARTNERSHIP WANTED

Having been released from the M. O. R. C. because of an attack of acute articular rheumatism I am now looking for a location or partnership. I am an American, 39 years of age, married, one child. Have been a successful general surgeon. Am also a laboratory man. Own complete equipment, including x-ray outfit. Am an Episcopalian, Mason, and Odd Fellow. Desire a town of 2,000 to 10,000. Registered in Minnesota and North Dakota. Address 589, care of this office.

OFFICES FOR RENT IN P. & S. BUILDING, MINNEAPOLIS

Lease of very desirable top floor space in Physicians & Surgeons' Building. Runs three years. Reception, four examining, and large x-ray-room, with special transformer and plate-display and developing rooms. Laboratory and private toilet. Takes in whole ell with light on three sides. Rental under lease is \$100 per month; would be about \$125 at regular rates. Am going into M. R. C. Address or call upon Dr. Hugh S. Willson, 807-9 P. & S. Building, Minneapolis.

PRACTICE OFFERED

A \$10,000 unopposed, general and surgical practice in a town of 600 people, rich community, for the price of hospital and office fixtures. Hospital is nine rooms and thoroughly equipped, have two graduate nurses all the time. Hospital is self-sustaining. Must be able to do surgery. Hospital is equipped with x-ray, microscope and cystoscope and everything necessary for successful work. Price of all is \$2,500, half down and balance in one year. Will sell half interest and will make arrangements when you investigate it. Have a commission in the Medical Reserve Corps and will go in thirty to sixty days. Address 579, care of this office.

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Ada	1,253	1,432	0															
Albert Lea	4,500	6,192	4															
Alexandria	3,681	3,001	5		1		1									1		
Anoka	3,769	3,972	7															2
Austin	5,474	6,960	8		1													
Barnesville	1,326	1,353	0										1			1		
Benndji	2,183	5,099	8												1	1		
Benson	1,525	1,677	1													1		
Blue Earth	1,900	2,319	2															1
Brainerd	1,524	8,526	13	1												2		1
Breckenridge	1,282	1,840	2															
Canby	1,100	1,528	6												1			1
Cannon Falls	1,239	1,385	2													1		
Chaska	2,165	2,050	2													1		
Chatfield	1,426	1,226	1															
Cloquet	3,074	7,031	1		1													
Crookston	5,359	7,559	10			1		1								2		2
Dawson	1,962	1,318	3			1												
Detroit	2,060	2,807	4													1		
Duluth	52,968	78,466	86	8	1					6				1	4	4	1	13
East Grand Forks	2,077	2,533	1															
Ely	3,572	3,572	9															
Eveleth	2,752	7,036	5			1			1						2	1		1
Fairmont	3,440	2,953	7						1									2
Faribault	7,868	9,001	4											1				
Fergus Falls	6,072	6,887	16								1					3		
Glencoe	1,788	1,788	1	1														
Glenwood	1,116	2,161	2															1
Granite Falls	1,454	1,454	0															
Hastings	3,811	3,983	1															
Hutchinson	2,495	2,368	3															
International Falls		1,487	5												2			
Jordan	1,270	1,151	1													1		
Lake City	3,142	3,142	4		1							1				1		1
Le Sueur	1,937	1,755	3															
Little Falls	5,774	6,078	5															1
Luverne	2,223	2,540	1															
Madison	1,336	1,811	1															
Mankato	10,559	10,365	14		2									1		3		
Marshall	2,088	2,152	3							1						1		
Melrose	2,591	2,591	2															
Minneapolis	202,718	301,408	321	25	4	5	3	0	1	0	1	1	3	1	8	29	1	31
Montevideo	2,146	3,056	2															
Montgomery	979	1,267	0															
Moorhead	3,730	4,840	5													2		
Morris	1,934	1,685	5															2
New Prague	1,228	1,554	1															
New Ulm	5,403	5,643	13															
Northfield	3,210	3,215	4	1											2			2
Ortonville	1,247	1,774	8															7
Owatonna	5,561	5,658	6												1	2		1
Pipestone	2,536	2,475	1													1		
Red Lake Falls	1,666	1,666	0															
Red Wing	7,525	9,048	7													2		
Redwood Falls	1,661	1,666	0															
Renville	1,075	1,182	0															
Rochester	6,843	7,844	55		2											9	1	1
Rushford	1,100	1,011	1															
St. Charles	1,304	1,159	3			1									1			
St. Cloud	8,663	10,600	11	1		2										1		3
St. James	2,102	2,102	0															
St. Paul	163,632	214,744	198	25	6	8	4	1	0	0	0	0	1	1	7	16	1	15
St. Peter	4,302	4,176	0															
Sauk Centre	2,154	2,154	2															
Shakopee	2,046	2,302	3															1
Sleepy Eye	2,046	2,247	3															
South St. Paul	2,322	4,510	7													1		1
Staples	1,504	2,558	2															1
Stillwater	12,318	10,198	7													1		
Thief River Falls	1,819	3,174	6													1		1
Tower	1,111	1,111	0															
Tracy	1,911	1,826	0															
Two Harbors	3,278	4,990	6												1	1		
Virginia	2,962	10,473	9					1										2
Wabasha	2,622	2,622	5															1
Warren	1,276	1,613	0															
Waseca	3,103	3,054	1															
Waterville	1,260	1,273	3															
West St. Paul	1,830	2,660	0															
Willmar	3,409	4,135	5		1				1									
Winona	19,714	18,583	26	2		3										1		
Winthrop	813	1,043	0													2		2
Worthington	2,386	2,385	2	1														

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	0															
Aitkin	1,719	1,633	0															
Akeley			0															
Appleton	1,184	1,221	2															
Belle Plaine	1,121	1,204	1															
Biwabik		1,696	2						1									1
Bovey		1,377	0															
Browns Valley	721	1,058	2										1					
Buffalo	1,040	1,227	1													1		
Caledonia	1,175	1,372	0															
Cass Lake	546	2,011	1															
Chisholm		7,684	4			1										1		1
Coleraine		1,613	1															
Delano	967	1,031	0															
Farmington	733	1,024	0															
Fosston	864	1,055	2		1												1	
Frazee	1,000	1,645	1															
Grand Rapids	1,428	2,239	6														1	
Hibbing	2,481	8,832	9			1							1					3
Jackson	1,756	1,907	1															1
Janesville	1,254	1,173	1															
Kenyon	1,202	1,237	0															
Lake Crystal	1,215	1,038	2															
Litchfield	2,280	2,333	5	1		1											1	1
Long Prairie	1,385	1,250	2															
Madelia	1,272	1,273	3															
Milaca	1,204	1,102	1															
Mountain Lake	959	1,081	3														1	
Nashwauk		2,080	0															
North Mankato	939	1,279	0															
North St. Paul	1,110	1,404	1															
Osakis	917	1,013	1								1							
Park Rapids	1,313	1,850	1															
Pelican Rapids	1,033	1,019	0															
Perham	1,182	1,376	5														1	
Pine City	993	1,258	1															
Plainview	1,038	1,175	1	1														
Preston	1,278	1,193	0															
Princeton	1,319	1,555	4															
St. Louis Park	1,325	1,743	1															
Sandstone	1,189	1,818	1															
Sauk Rapids	1,391	1,745	0															
South Stillwater	1,422	1,343	1															
Springfield	1,511	1,482	1															
Spring Valley	1,770	1,817	2															
Wadena	1,520	1,820	1															
Wells	2,017	1,755	0															
West Minneapolis	2,250	3,022	5															1
Wheaton	1,132	1,300	3														1	
White Bear Lake	1,288	1,505	0															
Windom	1,944	1,749	1															
Winnebago City	1,816	2,555	3	1														
Zumbrota	1,119	1,138	1															
STATE INSTITUTIONS																		
Anoka, Asylum			0															
Faribault, School for Blind			0															
Faribault, School for Deaf			0															
Faribault, School for Feeble Minded			8	4														
Fergus Falls, Hospital for Insane			19	5													2	
Hastings, Asylum			4															1
Minneapolis, Soldiers' Home			12															
Owatonna, School for Dependents			0														1	
Red Wing, State Training School			0															
Rochester, Hospital for Insane			13	1														
Sauk Centre, Home School for Girls			0															
St. Peter, Hospital for Insane			14	3														
St. Cloud, State Reformatory			0															
Stillwater, State Prison			0															
OTHER PARTS OF STATE			711	57	4	21	7	3	4		5	1	6	1	24	65	1	82
Total for state			1839	139	24	46	15	7	8	6	9	2	13	8	55	172	11	190

*No report received. REGISTRAR not doing his duty.
129 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

SIOMINE

Siomine is an ethical product possessing all the therapeutic properties of potassium iodide, and is free from the objectionable ones, especially its nauseating effect. It is used where the iodides are indicated, it is easily administered, it is well borne, and on the whole is a very desirable substitute for the iodides.

It is put up in capsules, and is of uniform and unvarying composition.

The Howard-Holt Company, Inc., of Cedar Rapids, Iowa, will be pleased to send our readers descriptive literature.

PARAGON X-RAY PLATES

Messrs. Geo. W. Brady & Co., manufacturers of the well-known Paragon Plates, strongly advise that a good supply of their plates be purchased now, as the new war hospitals under construction, at home and abroad, may make demands that will greatly limit the supply.

It is safe to buy their plates under any circumstances. They are good things to have. They are known as the trouble-preventers. They are always dependable.

They are sold in the Twin Cities by Messrs. Noyes Bros. & Cutler, St. Paul and Minneapolis, and the Standard Medical Supply Co., Minneapolis.

ST. JAMES HOSPITAL AND SANITARIUM

When the above-named institution opened some years ago in its large and beautiful building, many wondered if the City of St. James could maintain a hospital and sanitarium at moderate prices that would meet the expenses incurred by the plant and the staff demanded by modern conditions. This institution has been maintained, and it is doing a splendid work. Its equipment has been largely increased from time to time, and the efficiency of the institution has continuously increased.

This Hospital and Sanitarium is a credit to the beautiful City of St. James, Minn., and the whole territory that it serves.

RÖNTGEN DIAGNOSIS

The large and rapidly increasing number of malpractice suits is largely due to the inability or neglect of physicians and surgeons to make skiagraphs of every fracture they treat. The physician owes it both to himself and his patient to make such an examination. But the need of Röntgen diagnosis is not confined to fractures. It is needed in much of the work of the internist and the specialist in other lines.

Every medical man cannot have an x-ray apparatus; but every community can have one, and should have one. Some doctor must be the leader in providing an equipment for this work in every community.

The Victor Electric Corporation, with sales distributors in Minneapolis and St. Paul, offers its Victor Röntgen apparatus, in many models, as the best obtainable to meet the wants of every community; and they will gladly furnish literature upon all phases of the work, and give special attention to all inquiries of medical men as to what can be done in röntgenology with their apparatus.

THE LABORATORY OF SURGICAL TECHNIQUE

This unique institution is making some special announcements in our columns, and we think these announcements of special interest. The person who learns to do a thing in the wrong way finds it almost impossible to learn the right way. The occasional surgical operator does not readily get fixed bad habits, and he readily changes.

The Laboratory of Surgical Technique, of Chicago, makes it easy to learn the right way, the best way, the only way; and this way is worth learning. It tends to efficiency, and therefore it is worth while.

Special courses are offered to those who seek quick results.

THE RADIUM INSTITUTE OF CHICAGO

When a group of well-known medical men in Chicago established The Radium Institute they gave assurance to the profession that radium would be used in it without any of the frills and the quackery that have made physicians hesitate to recommend its use in the class of cases, not the hopeless ones, in which it does the most good. Radium is not a last-resort remedy to be tried only on the dying; it is an efficient therapeutic remedy in many conditions that yield to it and to it alone; and some conditions are early benefited by it and by it alone.

The Institute's announcement in our advertising columns is interesting.

INFANT FEEDING

Practically every family physician is confronted with the necessity of selecting and prescribing an artificial food for infants. It was once, and not long ago, the custom to try all the foods on the market, hoping to find the right one. Too much is now known about the requirements of the child's digestive tract to make this hit-or-miss custom permissible, and the food that approaches nearest the requirements of the child, scientifically determined, is the food to select.

The contents of Mellin's Food are given on every container of the food, and it conforms so nearly to the contents of the child's natural food, that physicians find it satisfactory in a high degree. Certainly, the "Mellin's Babies" "look good," and physicians testify that their looks are due to the food that they assimilate.

THE NORTHWESTERN HOSPITAL OF MINNEAPOLIS

The Northwestern Hospital of Minneapolis is preeminently a home hospital, and it stands as a monument to the possible accomplishment of women. It is one of the largest and most efficiently conducted hospitals in the Northwest, and its staff contains the names of medical and surgical men of the highest standing in the profession.

The nurses' training-school of this Hospital attracts a class of patients who make the kind of nurses that have given nursing a reputation now enjoyed only by professional men and women.

Miss A. Jeanette Christianson has long been the efficient superintendent of the Hospital, and she will cheerfully give full information to anyone seeking to learn about the work of the Hospital or its Nurses' Training School.

THE FIRST AND SECURITY NATIONAL BANK

This large bank, with its millions of capital and surplus, and its many millions of deposits, is much like a great department store, especially in one respect: it has experts at the head of every department who vie with each other in seeking the greatest possible efficiency and courtesy in their respective departments, and their pride in their work is centered in efficiency in service to their customers, which inevitably results in legitimate profit to the bank.

Every physician should have a bank account, however small, and should accept the large service the bank offers him, through its experts, in the way of counsel in every business deal he contemplates entering into. The acceptance of such free and valuable advice would soon make the profession the poorest field in America for the get-rich-quick scoundrels to work in. It would give the profession a reputation for sanity, instead of insanity, in financial dealings.

ON GUARD AT THE READING GATE

It is a fine thing to guard our homes against alien soldiers of whose purposes we are all aware. But it is also very important to guard them against other insidious foes that creep in under the guise of friendly entertainers to plunder and destroy the cherished ideals, the lofty standards, the clear views that have given the home its character.

If you will familiarize your young people with the best reading, they will not be likely to crave what is inferior and demoralizing. The Youths' Companion is a powerful influence in awakening a taste for what is best in reading. It is on guard at the reading gate! Nothing cheap, mean or hateful passes its challenge. But neither does the crabbed and dull and austere. Cheery idealism is The Companion's countersign. Put it on guard at your reading gate!

The Companion is \$2.00 a year. If you do not know it, by all means send for sample copies giving a forecast of what the next volume will bring. By adding 25 cents you can also get McCall's Magazine, the best fashion authority for women and girls—both publications for \$2.25.

Our two-at-one-price offer includes:

- (1) The Youth's Companion—52 issues of 1918;
 - (2) All the remaining issues of 1917; (3) The Companion Home Calendar for 1918; (4) McCall's Magazine—12 fashion numbers of 1918—All for only \$2.25.
- The Youth's Companion, Boston, Mass.

DICHLORAMINE-T

A new antiseptic attracting much attention, recently introduced by Dr. H. D. Dakin, of the Herter Laboratory, New York, is Toluene-para-sulphondichloramine, or as it is commonly known, Dichloramine-T. This antiseptic is used in oil solution, either as a spray or as a direct application.

In a paper published in the July 7 number of the *Journal of the American Medical Association*, Dakin, Lee, Sweet, Hendrix, and LeConte tell of the use of this substance in 160 cases of infected wounds. They found that when sprayed upon these wounds or poured into them the usual time required for healing was reduced to one-third. The wounds were cured in one-sixth less time than by the celebrated Carrel irrigation method; also, the expense of dressings and nursing, and the technical skill required in the applica-

tion, was much less than by the irrigation method. It has also been found that Dichloramine-T sprayed into the nose and throat is an effective method of treating diphtheria and meningococcus-carriers.

Dichloramine-T contains about 29 per cent of chlorine, and can be used in very high concentration. It is also possible to apply to infected tissue solutions from 20 to 40 times as great as is possible with the Dakin-Carrel hypochlorite solution.

Dichloramine-T has been placed upon the market by The Abbott Laboratories, who also supply the Chlorinated Eucalyptol and Chlorinated Paraffin Oil prepared ready for use, according to the method described by Doctor Dakin. It promises to be a worthy partner of Chlorazene, the water-soluble antiseptic also devised by Dakin, which was placed upon the market by The Abbott Laboratories, and which is proving a phenomenal success.

Literature and prices will be sent on request to The Abbott Laboratories, Chicago.

ALCRESTA TABLETS OF IPECAC

Ipecac has long been favorably known to the medical profession and to many practitioners in the treatment of amebic dysentery as an hepatic stimulant and as an intestinal antiseptic. Physicians who long ago discarded ipecac medication because of the uncertainty of enteric coatings are welcoming ipecac "back to the fold" since it is now possible to administer massive doses of the drug without coating of any kind. This new method of giving ipecac is made possible through the absorption of ipecac alkaloids with a purified form of hydrated aluminum silicate; and since, in this form, the alkaloids of the drug are not liberated until in the presence of an alkaline solution, the drug passes the stomach unchanged and the alkaloids are liberated in the intestinal secretions.

The reawakened interest in ipecac is due to its proven specificity in amebic dysentery and to the fact that large doses of the adsorbed ipecac alkaloids may be taken by mouth without nausea. Given in this way ipecac has been used extensively in a number of diseases where it was heretofore impracticable. The drug possesses decided value in pyorrhea, amebic infections of the tonsils, typhoid fever, and various intestinal disturbances, such as flatulence, diarrhea, and constipation. The almost startling results that have been attributed to the administration of large doses of ipecac by means of this new compound, make it appear that its field in therapeutics is even wider than first anticipated. It is possible to give patients the equivalent of one hundred grains of the drug daily without nausea or vomiting and the tablets may be crushed before swallowing.

In addition to these Alcresta Tablets of Ipecac, as this product is known, Messrs. Eli Lilly & Company, the manufacturers, have recently added to their extensive line, an ipecac laxative tablet called Ipelax,—a combination of the usual A. S. & B., with the addition of the equivalent of five grains of ipecac in each tablet, a dose heretofore quite unusual in a tablet without an enteric coating.

Interesting researches are being conducted at the Lilly Scientific Laboratories, and in the light of already published information it would seem that ipecac is entering upon a new era in medicine. Interesting literature will be sent our readers by Eli Lilly & Company on request.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, NOVEMBER 15, 1917

No. 22

MINNESOTA STATE MEDICAL ASSOCIATION OFFICERS 1917-1918

PRESIDENT

ARTHUR J. GILLETTE, M. D. St. Paul

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R. J. HILL, M. D. (1 year) Minneapolis

FIRST VICE-PRESIDENT

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COUNCILOR—FIFTH DISTRICT

C. E. PERSONS, M. D. (2 years) Marshall

SECOND VICE-PRESIDENT

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F. R. WEISER, M. D. (3 years) Windom

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COUNCILOR—EIGHTH DISTRICT

H. F. McGAUGHEY, M. D. (3 years) Winona

TREASURER

EARLE R. HARE, M. D. Minneapolis

MEMBERS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

COUNCILOR—FIRST DISTRICT

C. E. DAMPIER, M. D. (1 year) Crookston

Delegates

G. D. HEAD, M. D. (2 years) Minneapolis

COUNCILOR—SECOND DISTRICT

J. G. MILLSPAUGH, M. D. (2 years) Little Falls

H. P. RITCHIE, M. D. (1 year) St. Paul

COUNCILOR—THIRD DISTRICT

W. A. DENNIS, M. D. (2 years) St. Paul

Alternates

J. W. BELL, M. D. (2 years) Minneapolis

W. H. MAGIE, M. D. (1 year) Duluth

THE COMMITTEES HAVE NOT AS YET BEEN
APPOINTED

MINNESOTA STATE MEDICAL ASSOCIATION

MINUTES OF THE FORTY-NINTH ANNUAL MEETING, HELD AT ST. PAUL, OCTOBER 10, 11, and 12, 1917.

PROCEEDINGS OF THE HOUSE OF DELEGATES

FIRST SESSION—WEDNESDAY, OCTOBER 10, 1917.

The House of Delegates met in the St. Paul Hotel, and was called to order at 2 P. M. by the President, Dr. H. M. Workman, of Tracy.

The President appointed as a Committee on Credentials Dr. Richard J. Hill and Dr. C. L. Scofield; and the Committee subsequently made the following report:

DELEGATES TO THE 1917 MEETING

Aitkin County—Delegate: C. Graves.
 Blue Earth—Delegate: J. W. Andrews.
 Blue Earth Valley—Delegate: W. C. Chambers.
 Brown-Redwood—Delegate: J. C. Rothenburg.
 Camp Release—Delegates: Geo. Mesker and D. N. Jones.
 Carlton—Delegate: A. Barclay (moved to Idaho, and is therefore not a member).
 Central Minnesota—Delegate: H. C. Cooney.
 Chisago-Pine—(No delegate.)
 Clay-Becker—Delegate: W. J. Awty.
 Dodge—Delegate: E. E. Harrison.
 Freeborn—Delegate: W. L. Palmer.
 Goodhue—Delegate: M. W. Smith.
 Hennepin—Delegates: L. A. Nippert, J. W. Bell, J. C. Litzenberg, S. R. Maxeiner, C. W. Watson, H. L. Staples, H. B. Sweetser, and R. E. Farr.
 Houston-Fillmore—Delegate: C. B. Eby.
 Jackson—Delegate: W. S. Hitchings.
 Kandiyohi—Delegate: C. L. Scofield.
 Lyon-Lincoln—Delegate: W. Wakefield.
 McLeod—Delegate: J. B. Clement.
 Meeker—Delegate: Karl A. Danielson.
 Mower—Delegate: None.
 Nicollet-LeSueur—Delegate—R. M. Phelps.
 Olmsted—Delegates: C. E. Fawcett, H. Z. Giffin.
 Park Region—Delegate: A. Mason Randall.
 Ramsey—Delegates: J. M. Armstrong, E. W. Buckley, Chas. D. Freeman, E. M. Jones, Robert Earl, and E. M. Hammes.
 Red River Valley—Delegate: G. S. Wattam.
 Rice—Delegate: F. S. Warren.
 St. Louis—Delegates: N. H. Gillespie, C. W. Taylor, and J. R. Kuth.
 Scott-Carver—Delegate: H. A. Schneider.
 Stearns-Benton—Delegate: C. S. Sutton.
 Steele—Delegate: F. M. Smersh.
 Southwestern—Delegate: H. Wiedow.
 Upper Mississippi—Delegates: Paul E. Kenyon, and Geo. Wm. Beach.
 Wabasha—Delegate: A. A. Rankin.
 Waseca—Delegate: None.
 Watonwan—Delegate: H. B. Grimes.
 West Central—Delegate: Amos Leuty.
 Winona—Delegate: E. S. Muir.

Wright—Delegate: (Letter states Dr. Catlin is at Sparta in Reserve Corps, and there has been no meeting of Society).

It was moved and seconded that the report of Committee on Credentials be adopted. Carried.

On motion of Dr. L. A. Nippert, Dr. H. R. Russell, of Stewartville, was seated as an alternate delegate.

The President announced a quorum present, and said the Association was ready to proceed with its business.

The reading of the minutes of the 1916 meeting was called for.

The Secretary stated that these minutes had been printed in the November 15th issue of THE JOURNAL-LANCET, and he did not think it was necessary to read them. However, he would be glad to do so, if it was so desired by the Association.

Dr. Richard J. Hill moved that the reading of the minutes of the 1916 meeting be dispensed with. Seconded and carried.

The Secretary read his report and in connection therewith the report of the attorneys.

REPORT OF THE SECRETARY

There have been 1,610 paid memberships, the largest membership in the history of the Association.

The defense feature has been quite active, some twenty cases having been defended. It has cost some \$2,750, or about \$700 less than last year. It is hoped that the increase of dues to \$4.00 a member will be passed, if the House wishes to keep up the defense feature.

The attorneys' report will give in detail the different cases.

There have been no new societies organized. Several of the societies are doing good work. A few seem to be paper organizations and are doing little scientific work.

The report of the attorneys is as follows:

ATTORNEYS' REPORT

September 25, 1917.

Dr. Thomas McDavitt,

Dear Sir: Replying to yours of September 15, relative to a statement of work done since our last report, we beg to advise that this statement has been somewhat delayed owing to the absence of the writer from the city. We submit the same herewith.

PETERSON VS. BRANTON

This is an action against Dr. Branton, of Willmar, rising out of alleged malpractice in setting a broken radius and ulna. Verdict was returned in the lower court in favor of plaintiff for \$4,500. Motion for a new trial was made and denied. The court cut the verdict to \$3,000. An appeal was taken to the Supreme Court, and a new trial obtained. This case will probably come on for trial the first week of October.

WALSH VS. BURNS & BURNS

This was an action for alleged wrongful operation. Plaintiff complained that she went to the hospital to be

operated on for pus under the lung, and that her appendix was removed without her consent. Verdict was rendered for plaintiff, \$1,000. Motion for new trial was made and granted, and on the second trial verdict was rendered for the defendants.

PIEART VS. SMITH & PENGELLY

Action against Dr. Smith and Dr. Pengelly, of Iron-ton and Crosby, for alleged malpractice in connection with the reduction of a Colles' fracture. The case was tried at Brainerd. Verdict for \$1,000 rendered in favor of plaintiff. Motion for new trial granted by court, and on the second trial the verdict was for defendants.

HOWLEY VS. BAKER

Action against Dr. Baker, of Minneapolis, for damages, it being claimed that Dr. Baker diagnosed a displacement of the hip as a strain of the sacro-iliac joint. Upon the case coming on for trial a dismissal was secured.

BORZYK VS. ARZT

Action against Dr. Arzt, of Jackson, Minn., for alleged malpractice in connection with a compound fracture of the ulna and radius. Case was tried, and verdict rendered for the defendant.

BARTHOLOMEW VS. HAGEN

Action against Drs. Hagen and Bessessen, of Minneapolis, in connection with the treatment of a fracture at the neck of the femur. At the close of plaintiff's evidence the case was dismissed by the court.

CHRISTIANSON VS. HEGGE

Action against Drs. Hegge and Hegge, of Austin, Minnesota, for alleged malpractice in connection with an operation for appendicitis. At the close of the testimony verdict was directed for the defendants.

HANSON VS. OLANDER

Action against Dr. Olander, of St. Paul. This will be reached for trial some time this fall.

LUND VS. STUART

After we had prepared the case for trial, plaintiff was not ready to go ahead, and the case was stricken from the calendar. We have heard nothing more of it and believe it is at an end.

HERBERT VS. COSMAN

Action against Dr. Cosman, of Minneapolis, with reference to alleged malpractice in connection with the removal of the tonsils. Case was tried before a jury, and verdict directed for the defendant.

JACOBSEN VS. MEIGHEN

This was an action against Dr. Meighen, of Ulen, Minn., for alleged malpractice in connection with a fracture of bones of the leg. Verdict rendered for plaintiff, \$1,000, and while we were preparing an appeal to the Supreme Court the case was settled for a nominal amount. We believe this verdict would have been reversed, and decision rendered for the defendant.

ANDERSON VS. MCCOY AND MONIHAN

This was an action against Drs. McCoy and Monihan. After thorough investigation defense was declined.

LORENSEN VS. BOHLAND

Action against Dr. Bohland, of St. Paul, for alleged malpractice in the treatment of an arm. At the time of trial action was dismissed.

HILES VS. DREISBACH

This action against Dr. Dreisbach, of Minneapolis, will probably be tried this fall.

DALSGAARD VS. MEIERDING

Action against Dr. Meierding, of Springfield. Answer has been interposed. The case will be tried in December.

KITTELSON VS. BOECKMAN & BARNES

Answer has been interposed, and the case will be tried this fall.

NORTON VS. UTLEY AND MIDWAY GENERAL HOSPITAL

Answer has been interposed, and the case will be tried this fall.

If there is any further information that you desire, kindly advise.

Yours very truly,
DURMENT, MOORE & OPPENHEIMER,
By W. H. Oppenheimer.

The Treasurer presented his report:

FINANCIAL STATEMENT
MINNESOTA STATE MEDICAL ASSOCIATION
October 1, 1916, to October 1, 1917

RECEIPTS

On hand Oct. 1, 1916, cash.....	\$3,292.76
On hand, Oct. 1, 1916, bonds.....	4,000.00
Thos. McDavitt, Secretary—Dues..	4,905.00
Interest—Bonds—Daily Balances...	220.22
Unpaid Voucher No. 212.....	5.50
	<hr/> \$12,423.48

DISBURSEMENTS

JOURNAL-LANCET	\$1,560.74
Thos. McDavitt, Office expense....	370.78
Salaries	400.00
State meeting expense.....	566.55
National Council Committee.....	43.00
Traveling expense	49.56
Printing and stationery.....	97.00
Office equipment	76.72
Premium, Secretary's and Treas- urer's bonds	32.50
Safety-deposit box	5.00
Legislative Committee	6.87
Overpaid dues	12.00
Legal expense	2,750.68
Cash in bank Sept. 29, 1917.....	2,452.08
Bonds	4,000.00
	<hr/> \$12,423.48

EARLE R. HARE,
Treasurer.

ITEMIZED STATEMENT OF DUES RECEIVED
FROM THOMAS McDAVITT, SECRETARY

October 1, 1916, to October 1, 1917

Aitkin County	\$15.00
Blue Earth County.....	81.00
Blue Earth Valley.....	78.00
Brown-Redwood	81.00
Camp Release	156.00
Carlton County	27.00
Central Minnesota	33.00
Chisago-Pine	54.00
Clay-Becker	72.00
Dodge County	24.00
Freeborn County	48.00
Goodhue County	57.00

Hennepin	1,185.00
Houston-Fillmore	87.00
Jackson County	39.00
Kandiyohi-Swift	51.00
Lyon-Lincoln	54.00
McLeod County	39.00
Meeker County	30.00
Mower County	54.00
Nicollet-LeSueur	60.00
Olmsted County	165.00
Park Region	120.00
Ramsey County	786.00
Red River Valley	180.00
Rice County	69.00
St. Louis County	417.00
Scott-Carver	51.00
Southwestern Society	135.00
Stearns-Benton	132.00
Steele County	39.00
Upper Mississippi	216.00
Wabasha County	42.00
Waseca County	33.00
Watonwan	21.00
West Central	63.00
Winona	69.00
Wright	42.00

Total\$4,905.00

EARLE R. HARE,
Treasurer.

Dr. Richard J. Hill moved the acceptance of the Treasurer's report. Motion seconded by Dr. Scofield, and carried.

In connection with the Treasurer's report, the Secretary stated that there was an amendment offered last year by Dr. Hill to Article IX, Section 15, of the By-Laws, to increase the annual dues one dollar. This amendment should be considered and acted on at this time.

Dr. Hill stated that the amendment he offered last year was to the effect that the By-Laws be amended to read: "The annual dues shall be \$4.00 instead of \$3.00."

He moved that this amendment be now adopted. Motion seconded.

DR. EARL R. HARE: I rise to support the motion. I think it is easy to see where we are going to land in the near future so far as the financial situation is concerned. However, I wish to state one or two facts in relation to those which I have mentioned in connection with the report as treasurer which will justify the passage of the motion. In the first place, those of us who are in the State Association at the present time are being adequately defended by the State Association upon the payment of \$1.00 per year. I think the records show that there is just one case in which judgment passed against the defendant. If we are to use up the surplus money which we have on hand, and then allow the Association in future years to assess its members adequately for

the defense feature, it would be unfair to the men who come in as members five or ten years from now. It would simply mean that we had used up the surplus which was accumulated years before in defending ourselves and leaving the new members to pay for our defense in the future. So I think it is only fair, just, and right that this motion should prevail.

DR. L. A. NIPPERT: I wish to ask if the addition of one dollar is sufficient to cover the deficiency.

THE PRESIDENT: It will be for quite a time in the opinion of the Council.

DR. E. S. MUIR: I want to say that in my judgment we are justified in increasing the dues to \$4.00. Many of us carry protection in other insurance companies to protect us adequately, but there are many members of the State Association who carry no other insurance. If they are not adequately protected they will be the ones to suffer, and the man who has a small practice and does not feel that he can afford more expensive protection should be protected for the benefit of all of us. I favor advancing the dues to any necessary amount to meet our obligation to these members.

DR. J. W. ANDREWS: I rise with some hesitancy to oppose this motion because every one thus far has been in favor of it. The last speaker has taken a philanthropic view of it,—that there are some members of the Association in country places who are not able to carry old line insurance for protection, and they would have to depend upon this one dollar a year to protect them. Now, it is very apparent from the Treasurer's report that this deficiency comes about from the fact that we are an insurance company; we are carrying insurance for protection against malpractice.

Another thing is evident, and I know it, not from what I have heard here today, but from my observation throughout the state with physicians, that malpractice suits are becoming more common because of this very fact, and because it is known to laymen and all attorneys that a suit is back of all malpractice cases.

I know of one case where a suit was brought by an attorney against his family physician, and in conversing with the family physician and with the attorney the fact was mentioned, although it does not apply to insurance exactly, that "I have sued you only for the amount you are protected for."

From a business standpoint, and not from a philanthropic point of view, I do not see why this Association should carry indemnity insur-

ance or protection for almost all physicians, or perhaps for a large number of physicians who do not carry insurance, who are not protected against malpractice suits. One dollar is not very much, but I tell you we are being called upon for dollars and dollars for liberty loans, and for this and for that; and I do not believe we ought to increase our dues. I do not believe, as I have expressed myself before, that we ought to carry this insurance. I do not know of any physician in our part of the country who does not carry insurance in some company other than this Association. He does not care anything about it; he does not use it if a case should come up. It does not protect him against a verdict, and consequently he considers it of no value; and he must carry for his own protection other insurance, and he generally does. If there is anybody from my part of the state who knows of a single physician who does not carry insurance in other companies and does depend upon the defense feature of this Association, I wish he would speak. In our part of the state we do not depend upon that insurance at all, and we are being forced to pay an extra dollar, small as it is. It is the principle we are after. We are forced to pay this extra dollar for insurance upon which we cannot depend, and do not care for. Personally, I hope this motion will not prevail.

DR. H. B. SWEETSER: There are some things about this that are difficult. In our county society we have dues of \$8.00, and an increase of one dollar sounds big. I would like to inquire if you could not change this a little so that we could have the insurance protection separate from those dues which go through our county societies. Is it possible to have the insurance feature, the dues of which will be collected directly by the State Association? We ought to know about that. A dollar does not seem very much, but when you come to have the secretary of a county society say that your dues are so much, we do not appreciate that a dollar is given for this purpose. According to the report of the Treasurer, in four years our expenses have materially increased for defending malpractice suits. It will not be more than a year or two before this dollar will be absorbed, and we shall again have to increase our dues in the State Association collected from the county society for this purpose, and that will make it perhaps ten or eleven dollars. Is there any way of meeting this so that we can have indemnity protection or protection in the years to come directly from the State Association and paid directly into it? Or, if it goes the

other way, have it itemized so that men belonging to county societies will not think they are paying the whole amount for the county societies.

THE PRESIDENT: We cannot very well make these assessments separate because it does not provide for it in the By-Laws; neither can we carry an insurance feature because we are not an insurance organization.

DR. E. W. BUCKLEY: At the risk of repeating what I said last year when Dr. Andrews brought this matter up, I will make a few remarks along the lines mentioned by him. Instead of cutting off this dollar that is asked for, I would be in favor of passing a resolution that all members of the State Association cut off all private insurance company protection. Dr. Andrews says that a lawyer brings suit for the amount that a doctor is protected for. I believe these suits are growing, not so much because doctors make more money now than they did in the past, but because we have this private insurance protection, and it is a well known fact that the shyster lawyer is ever ready to bring suit against a doctor on the slightest provocation, and a doctor is usually the medium through which he hopes to get some money. The poor doctor in the country who thinks perhaps he will never be sued is the one that needs this protection, and he should feel that this Association is back of him in his fight, and the man who will go on the witness stand and testify against him should not be considered a good member of the State Medical Association, because he is helping to fight his brother practitioner. Both are protected by the State Medical Association.

So far as Dr. Sweetser's argument is concerned, it is six to one and half a dozen to the other. The Treasurer told us how the money was spent for this protection, and in his additional report he made it clear.

The report of the attorneys for the State Association is satisfactory, showing that the expense has decreased, instead of increased. I want to emphasize the point that the doctors who are protected by insurance companies which will pay indemnity in case a verdict is secured are responsible for a large number of the suits. I believe the attorneys before bringing a suit look into the matter of whether the doctor is protected by the State Medical Association, which pays no judgment, or whether he is insured in some insurance company which pays up to a certain guaranteed amount.

DR. HARE: The analysis of the figures I have already given you answers Dr. Sweetser. In the

last three years, if we average the figures, the legal fees have been about the same. They have neither increased nor decreased to any considerable amount. The dues, if raised one dollar, will increase our receipts by about \$1,500 or \$1,600 a year. Throughout four years, if we had an additional dollar, we would get \$6,000 additional in the treasury. We have expended about \$2,000 of the original surplus, so that I think, unless the defense feature increases out of proportion in the past, one dollar additional will run it for a long time, and we shall gain back much of our original surplus.

DR. C. W. TAYLOR: If all men in the State Medical Association who have had suits brought against them, had depended upon this Association for their defense, we should have run considerably behind. The point is that we have a variety of insurance that does not protect us except as the attorneys see fit. That may be wise or not. My own opinion is that for the protection I carry I want a fair fight. I want the case fought out. The question is debatable whether it is wise to carry that variety of insurance that carries with it the right of settlement. I have heard that phase of the subject discussed, pro and con. But one thing is sure: physicians have judgments charged against them, rightly or wrongly, which they have settled, and it is like fire insurance. A man wants protection that covers that particular thing; therefore, as Dr. Andrews has stated, most of our members carry additional insurance probably which costs them anywhere from \$18 to \$25 for a policy. In other words, we are duplicating our insurance, and that is the one particular thing that is not satisfactory. This is not a criticism against the attorneys of the Association,—they are very good men,—but we are paying from \$18 to \$25 for insurance, and then paying a dollar extra. The wisest thing to do is to pay up our obligation or levy an assessment. It is a question whether we should raise our dues to a sufficient amount to cover actual indemnity, so that we shall be efficiently protected and drop our other insurance, or whether we should close this out to advantage and not have it drag along as an assessment, as is the case with insurance companies.

DR. C. L. SCOFIELD: We are losing sight of the fact that the only expense of a suit may not be a financial loss. There are enough men in this Association presumably who do not carry this other insurance who would be inadequately defended if not protected by the State Association to make it worth while to spend this money.

A suit won is a great deal of encouragement to the attorney and his client, who wish to get a little easy money out of the doctor; and in this discussion so far we have lost sight of the protection and good that is done by the difficulty in getting and carrying these suits to a successful issue on the part of the individual suing. It is worth fully the two dollars that this new proposition contemplates in discouraging suits by having them properly defended, as the State Association is doing. I have gone through two of these suits as a witness, and I am thoroughly convinced that as conducted they were very much better done than they would have been by a local attorney who is not doing this kind of work all the time as the attorneys for the State Association are.

DR. J. G. MILLSPAUGH: I wish to endorse what Dr. Andrews has said. Physicians in my part of the state are anxious to be identified with the State Association and with everything it does, and every one of them, so far as I know, is carrying other insurance and is paying from \$10 to \$25 for it. There is a sentiment in my section of the country that this insurance ought to be dropped, or it ought to be charged for sufficiently to make it satisfactory without carrying any other insurance.

One of the speakers said we want protection or indemnity in case judgment is rendered against us. I do not believe many men will be satisfied unless they are protected. If this question is not threshed out satisfactorily now, it will be taken up in the future, and then it will constitute a very live question. I myself believe it is a good thing to increase the dues one dollar, and I shall support the motion. I believe all members of the Association would be glad to pay the extra dollar, but they will not be satisfied to carry and depend upon that insurance.

At the conclusion of Dr. Millspaugh's remarks, the motion to adopt the amendment was put and carried unanimously.

The report of the Committee on Necrology was presented as follows:

REPORT OF THE COMMITTEE ON NECROLOGY

DR. J. R. CANNON

Dr. J. R. Cannon, Assistant Physician at the State Sanatorium, at Walker, died very suddenly of heart disease on September 5, 1917.

DR. JAMES B. GOULD

Dr. James B. Gould, of Minneapolis, died on October 17, at the age of 56. He was a graduate of the University of Minnesota and of Jefferson Medical College, Philadelphia.

DR. OWEN J. EVANS

Dr. Owen J. Evans, of Minneapolis, died last October at the age of 76. Dr. Evans was the last surviving charter member of both the Hennepin County Medical Society and of the Minnesota State Medical Association. He was graduated from the Albany Medical College, and came to Minneapolis in 1865.

DR. J. T. DUNN

Dr. J. T. Dunn, a former partner of Dr. W. L. Palmer, of Albert Lea, died October 26 in Pasadena, Cal., where he had gone for his health.

DR. A. P. WOODWARD

Dr. A. P. Woodward, of Northfield, died at his home November 6 at the age of 64. The cause of death was an acute attack of rheumatism of the heart.

DR. R. E. CAVANAUGH

Dr. R. E. Cavanaugh died at his home in Duluth on December 24 from heart failure.

DR. A. W. GIDDINGS

Dr. A. W. Giddings, of Anoka, died at his home February 4 at the age of 86. Dr. Giddings graduated in New York in 1854, and came at once to Minnesota. He had not been in active practice for the last thirteen years, but for fifty years he was engaged in medical practice.

DR. A. P. WALRATH

Dr. A. P. Walrath, of Minneapolis, died on March 20 after an operation for appendicitis, at the age of 61.

DR. AUGUSTUS W. STINCHFIELD

Dr. Augustus W. Stinchfield, of Rochester, Minn., died last month at the age of 74. Dr. Stinchfield was one of the pioneer physicians of Olmsted County, having practiced in Eyota nearly twenty years before locating in Rochester.

DR. J. H. FRANK

Dr. J. H. Frank, a practicing physician of Anoka for the past twenty-two years, died at the age of 60 at his home on April 1.

DR. J. N. MALLORY

Dr. J. N. Mallory, of Emily, died on April 27 after an illness of several weeks.

DR. J. A. CROSBY

Dr. J. A. Crosby, a resident of Minneapolis for over thirty years, died at his home on May 1 at the age of 63.

DR. A. J. KIRGHIS

Dr. A. J. Kirghis, of St. Cloud, died on May 31 from consumption contracted in the trenches while in the French hospital service. Early in the war Dr. Kirghis volunteered for service, and spent several months in France. Dr. Kirghis was born in Lyons, France, in 1876, and had studied in Harvard and other American schools, as well as in France. He was a highly accomplished gentleman.

DR. DAVID W. HORNING

Dr. David W. Horning, of Minneapolis, died last June at the age of 65. Dr. Horning had practiced in Minneapolis over thirty years, having formerly practiced at Lake City.

DR. JACOB L. BERTHOLD

Dr. Jacob L. Berthold, of Perham, died at his home on July 6 from carcinoma of the colon, at the age of 57.

Dr. Berthold was a graduate of the Medical Department of the University of Maryland, Class of 1886, and had practiced in Perham over thirty years.

DR. D. GRASS

Dr. D. Grass, a graduate of the Medical School of the University of Minnesota and of Rush, died last month in Chicago, where he had practiced since 1902.

DR. KATE S. KAVANAGH

Dr. Kate S. Kavanagh, of Minneapolis, died last August at the age of 63. Dr. Kavanagh had practiced twenty-four years, eight of which were in Minneapolis. She was a member of the Hennepin County Medical Society and the State Medical Association.

DR. J. W. KURZ

Dr. J. W. Kurz, of Cook, died last August at the age of 33.

DR. FREDERICK F. LAWS

Dr. Frederick F. Laws, of Minneapolis, died last month at the age of 68. Dr. Laws was one of the founders of the Norwegian Lutheran Deaconess Hospital of Minneapolis, and had practiced in Minneapolis thirty-two years.

DR. W. T. ADAMS

Dr. W. T. Adams died at his home in Elgin on April 25 at the age of 68, following a year's illness due to heart trouble.

DR. ARTHUR C. ROGERS

Dr. Arthur C. Rogers was born in Decorah, Iowa, July 17, 1856. He died January 2, 1917. He received his early education in the schools of Ohio and Michigan, afterward attending the Raisin Valley Seminary near Adrian, Michigan. From there he entered Earlham College at Richmond, Indiana, from which he was graduated in 1877 with the degree of B. S. In June, 1905, this college conferred the degree of LL. D. in recognition of his remarkable work for the feeble-minded.

DR. EVERTON J. ABBOTT

Dr. Everton J. Abbott, born October 19, 1849, at Milan, Erie County, Ohio, died February 25, 1917.

In the death of Dr. Everton J. Abbott, St. Paul has lost a foremost citizen and a physician who more nearly than any other man in the profession there was the ideal general practitioner. For when he began the practice of medicine it was expected that the physician should take care of every kind of case that turned up, with the exception, perhaps, of those that required the nicer operations on the eye and ear.

Dr. Abbott never shrank from any work he was called upon to perform, and to the end of his practice accepted cases in all the branches of medicine. It would not do for every man to attempt so wide a practice; fortunately, Dr. Abbott was well fitted for it. With an excellent medical education as a foundation, his natural talent and adaptation for the practice of medicine enabled him with the assistance of experience to become one of the foremost physicians of this community. His skill and ability were rewarded by the acquisition of a large practice, and by his appointment as Clinical Professor of Medicine in the University Medical School. He made an excellent clinical teacher, adding to thorough medical knowledge great ability in diagnosis and the power to interest and impress the student. His recognized skill as a diagnostician made

him much in demand as a consultant, and his attitude towards his fellow practitioners was always so fair and high-minded that no one ever had cause to regret having called him into consultation.

In these days when it must be admitted with regret that commercialism has taken a strong hold upon the medical profession, a practice like that of Dr. Abbott is an inspiring example.

During all the years of his active practice he responded without question or inquiry to every call that was made upon him, not stopping to find out whether or not he was likely to be recompensed for his work. It was due no doubt largely to his constant devotion to his work and to his refusal to spare himself day or night or to take necessary rest by vacations, that he became the victim of a slowly developing malady that finally made him virtually a prisoner in his room for the last four years of his life. The hardship of such a fate to an active man must have been inconceivably great, but he bore it with fortitude and, almost up to the end, retained an active interest in the life about him and particularly in the affairs of the profession to whose credit he had been so great a contributor.

DR. ETHELBERT FREMONT GEER

Dr. Ethelbert Fremont Geer died December 24, 1916, in his 59th year as the result of an apoplexy which he suffered nine days previously.

Dr. Geer was born in Hartford, Conn., in the spring of 1858, and came of good old New England stock. His parents were General Elihu Geer and Eliza Selden. He graduated at the University of Vermont, College of Medicine, Burlington, Vt., in 1884. This same year he was married to Helen Hazen and immediately came to St. Paul, where until his death he practiced his profession with distinguished skill and success.

He is survived by his widow and seven of his eight children.

As a citizen he took much interest in the civic and political affairs of St. Paul, and was always ready to do his part. For twenty-seven years he was a prominent and useful member of the Ramsey County Medical Society, and had served it at various times as vice-president, secretary, and treasurer. The phenomenal growth of the society membership in recent years can be traced directly to his hard work as chairman of the membership committee.

DR. CHARLES FREDERIC DENNY

Dr. Charles Frederic Denny, the only son and child of Robert Breck Denny and Veleria Titcomb Denny, was born November 26, 1857. Receiving his early education in the public and high schools of Newburyport, Mass., he then took a course in the Massachusetts College of Pharmacy, and afterwards entered the Harvard Medical School, from which he graduated in 1882. He served for a time as an assistant in the Adams Nerve Hospital of Jamaica Plain, Mass., and also for a time was connected with the staff of the McLean Asylum, of Somerville, Mass. In the Autumn of 1882 he heard the call, and came to St. Paul, where he began the practice of his profession and there continued during the following thirty-five years. He was a member of one of the oldest, most respected, and prosperous families of Boston, the Denny family, and, although an exceedingly democratic man, was truly and justly proud of his family name. The Doctor suffered an injury during his childhood which resulted in permanent deformity of the hip-joint and which he often referred to as a

handicap in his profession; but, of course, this was largely imaginary on his part, for those who knew him best, socially and professionally, scarcely noticed his infirmity.

Dr. Denny was a man of sterling character and upright principles, strictly honest and honorable in all his dealings, both in and out of his profession. He would often suffer a loss or an injury rather than inflict it on others. Ever ready and anxious to be kind and obliging to his fellow practitioners, by whom he was beloved and highly respected. The writer had been intimately associated with him for over twenty years, and never knew him to be guilty of an unprofessional or unkind act to his fellow-men. He was a man of no mean ability either medically or surgically, and delighted in keeping close to the advancements and newer things in his profession. He originated surgical appliances that were largely used here and elsewhere; and has many times successfully performed the various major surgical operations. For many years he was an efficient member of the staff of our City and County Hospital, and during the regime of the old Hamline Medical School he was one of its lecturers. For the last fifteen years he taught bandaging, at which he was an expert, to the graduating classes of St. Joseph's and St. Paul Hospitals. While he never aspired to an exceedingly large practice he enjoyed a very comfortable one, and his clients, like himself, were largely of the chosen, refined, and educated class. He was very charitable to the poor, often charging them little or nothing for his services. To the rich and poor alike, he was exceedingly painstaking and conscientious in the discharge of his duties. He was so thoroughly absorbed in the multitudinous things of his profession that he had neither taste, time, nor desire for public or political life. He was an honored member of the American Medical Association, Minnesota State Medical Association, and Ramsey County Medical Society, where his voice was often heard in the discussion of matters medical. A few months before his death, he inherited quite a comfortable sum from the estate of two wealthy aunts who predeceased him; but evidently it was not for him to enjoy this. For two years previous to his death his health was more or less impaired and especially so during the last five or six months of his life. Trusting that a change of climate and rest would aid in restoring his declining health, he sojourned in the Land of Sunshine and Flowers, Southern California, and there placed himself under the most expert medical care that the country could afford; but notwithstanding the fact that medical science had exhausted itself in his behalf, on the 24th of March he peacefully passed away in the Methodist Hospital of Los Angeles from ulcerative endocarditis. Although he is gone he is not forgotten for many admirable traits both in social and professional life. His remains were shipped to St. Paul, and the little chapel in which the last funeral services were held was filled to overflowing with his friends; and the beautiful floral tributes were emblematic of his pure, upright, and manly character. His parents, to whom he proved himself a dutiful, kind, and affectionate son in their later invalid years, predeceased him one and two years, respectively, leaving the Doctor, who had never married, the sole representative of his immediate family.

DR. BURNSIDE FOSTER

Dr. Burnside Foster died at his home in St. Paul on June 13 after an illness of several months. He was

born at Worcester, Mass., on May 7, 1861, coming from an honorable and distinguished family. He received his classical education at Yale, and was graduated in medicine from the Harvard Medical School in 1886. After a tour abroad he began the practice of medicine in Minneapolis, a few years later coming to St. Paul, where he practiced his profession until his death. He was married to Miss Sophie Hammond, a daughter of the late General John H. Hammond. His wife, a son and two daughters survive him.

Dr. Foster confined his practice to dermatology, in which he achieved an enviable reputation. He was a member of the American Dermatological Association, and contributed frequently well-studied papers on his specialty to various important journals. He was President of the Ramsey County Medical Society in 1906, and took a leading part in the establishment of *The Journal*, which he conducted editorially with marked ability for seventeen years. His work for the local society was productive and intelligent. As a trustee of the building fund he contributed in a marked degree to the accumulation and successful investment of the fund, and his wise counsel and experience will be missed.

Dr. Foster was perhaps most distinguished for his literary ability. A man of fine education and of broad culture, his literary taste was exceptional, and his style was vigorous and clear. He was a lover of the poets, fond of the older type of authors, and interested in the work of the less known classical writers. In particular he was interested in the early history of medicine, wrote many interesting accounts of early practitioners for foreign journals, and contributed to the history of our own local profession many facts of interest which would otherwise have remained buried in oblivion. For many years he was Professor of History of Medicine in the University of Minnesota, and his lectures on that subject were full of interest and stimulation in that important subject.

Dr. Foster has left upon the profession of St. Paul the imprint of an energetic and useful life.

Professionally his reputation was high, his talents were ever at the disposal of the demands of the profession, and his work was always directed to the upbuilding of the standard of efficiency, and to maintaining the high purposes of medicine. He was largely instrumental in the establishment of the Life Extension Institute, and his articles published on that subject attracted wide attention. He was a frequent contributor to many journals, other than those devoted to medicine, including articles on the popular side of medicine in the *North American Review* and publications of that type. His interest in medicine as a profession was always keen, and his energy in promoting the appreciation of medical work by the general public has contributed largely to the advanced standing of our profession in the public mind.

His character was moulded along strong lines. He was energetic, vigorous, a lover of truth, a firm friend, an implacable foe of all that was false, and withal a courteous gentleman who will be missed in the profession and among his friends.

DR. EMIL HESSEL BECKMAN

Dr. Emil Hessel Beckman was born February 15, 1872, at Grundy Center, Iowa. He was graduated from Iowa College at Grinnell, Iowa, 1894, with the degree of Bachelor of Philosophy. After four years of service in the public schools as a teacher of Latin and Greek

and as high-school principal, he entered the College of Medicine and Surgery of the University of Minnesota, from which he was graduated in 1901. During his senior year in medicine he served as interne in the City and County Hospital of St. Paul. In July, 1901, he became an assistant bacteriologist in the laboratory of the Minnesota State Board of Health at the State University, a position which he held for four years. Much of his time was spent in investigating epidemics of diphtheria, smallpox, scarlet fever, etc., a work for which he was especially adapted. With Westbrook, Wilson, and McDaniel he was engaged in researches on the types and distribution of the bacillus diphtheriae, the means of isolating and identifying the bacillus typhosus from various sources, and on hemorrhagic septicemia in domestic animals. His taste for surgery may have developed in the large amount of experimental work done during these investigations.

In July, 1905, he was appointed city physician in Minneapolis thus being placed in charge of the City Hospital. In addition to his duties as superintendent he held a gynecological service, which gave him an opportunity to obtain some experience in surgery. After a year and nine months in this position he left it to accept work in the Mayo Clinic on April 1, 1907.

Dr. Beckman's first position in the Mayo Clinic was that of first assistant to Dr. C. H. Mayo. This post he held for four years. Early he evinced the keen clinical and surgical judgment which stood him so well in hand when, later, he became the head of Surgical Section 4 in the Mayo Clinic, his position at the time of his death. Here his work excited the admiration of all who saw it. His fine intuition guided him clearly along the difficult path of decision as to when to withhold and when to use his rare skill for the best interest of his patient. While his work covered the field of general surgery, his splendid technic was most evidenced in fine dissections of the cervical region in the presence of tuberculosis and cancer, in the correction of deformities of the nose and mouth, and in operations on the thorax, lungs, brain, spinal cord, and nerve ganglia.

Dr. Beckman both spoke and wrote clear, correct, and forceful English. During the nine and one-half years he was in the Mayo Clinic he became the author of thirty scientific papers.

Dr. Beckman was a member of the Olmsted County (Minnesota) Medical Society, the Southern Minnesota Medical Association, the Minnesota State Medical Society, the Minnesota Academy of Medicine, the Colorado State Medical Society, the American Medical Association, the Interurban Surgical Association (of which he was president at the time of his death), and of the American Surgical Association. He was head of Section 4 of the Surgical Division of the Mayo Clinic, and Associate Professor of Surgery on the Mayo Foundation of the University of Minnesota. He was president of the Olmsted County (Minnesota) Automobile Club, a director of the Rochester (Minnesota) Commercial Club, and a member of the Royal Arch Masons.

On January 1, 1902, he was married to Miss Jessie Sayre, of Odebolt, Iowa. He was the father of two children, Catherine, aged eleven, and Ruth, aged seven.

Dr. Beckman was taken sick October 31, 1916, with an infection of staphylococcus pyogenes aureus. The infection began on his nasal septum, but rapidly spread to the outer structures of the head, and then became

general, causing his death at 10 p. m. on November 7, 1916, after eight days' illness.

His desire to do the very best possible for the good of his patients, to keep fully abreast of the literature of his profession, to be the devoted companion of his wife and children, and to fulfill in the largest measure his duties as a citizen of the community in which he lived, combined to drive him at a speed constantly approaching the limit of his physical capacity. There is no doubt that when sickness came his resisting power was not high. His death was due, not to infection alone, but to the strenuous work of a none too strong physique.

The following resolutions were adopted at the Joint Memorial Meeting of the Olmsted County Medical Society, the Mayo Clinic, and The Mayo Foundation, November 8, 1916:

"WHEREAS, Our beloved friend, Dr. Emil Hessel Beckman, has passed from our midst, we, as members of the Olmsted County Medical Society, the Mayo Clinic, and The Mayo Foundation, of all of which he was a valued member, desire to express our sorrow.

"He will ever remain in our memories as an ideal in every walk of life, be it as citizen, surgeon, or friend, and we regard his loss as irreparable. A brave man, honest and generous, with strong intellect and absolute devotion to principle, he always endeavored to elevate his profession, and constantly labored to advance its interests. Broad-minded and singularly free from narrow prejudice, his strong personality inspired trust, confidence, and love in all with whom he came in contact.

"Therefore, Be it resolved that we extend our deepest sympathy to his family, and that a written expression of the same be given to them.

"Be it also resolved, That these resolutions be made a matter of record in the respective societies."

Committee:

W. F. BRAASCH,
E. F. KILBOURNE,
C. T. GRANGER.

Dr. J. W. Andrews, Mankato, Chairman, submitted the report of the Committee on Social Insurance, as follows:

REPORT OF COMMITTEE ON SOCIAL INSURANCE

At the Minneapolis meeting of the State Medical Association the subject of Social Insurance was mentioned, and no one present, not even your committee, seemed to know anything about it. I have searched the unabridged dictionary for a definition and failed to find any. While we shall not attempt to give a technical definition of *Social Insurance* we shall try to explain what Social Insurance is, and leave our auditors to frame a definition.

Social Insurance, perhaps, is only another word for liability insurance, but under Social Insurance are included fraternal, mutual, by assessment, and such other organizations as insure members of a lodge or a society or the employees of a corporation against sickness and accident, one or both. Some old-line insurance companies undertake to do this, but when this is done it is removed from the field of Social Insurance proper and falls more under the head of old-line insurance.

Social Insurance in the United States is a child of the twentieth century, although it has existed in some

of the European countries in some form for nearly a half century. The literature on Social Insurance in European countries is voluminous, and were we to undertake even a synopsis of this form of insurance in Germany, Russia, England, France, and other European countries, it would require a volume to contain it.

Let it be understood that any reference to Social Insurance in European countries refers to it as it existed before the war. We do not know, neither have we any means of learning, what changes the war has made in the belligerent countries.

As early as the sixties Russia enacted a law compelling all corporations to furnish free hospital services to their employees. We have not been able to learn whether that included medical attendance or not, but large corporations were required to maintain a hospital of at least six beds for every one hundred employees, and this was compulsory, as we might expect it to be under czarism. England had a law requiring corporations or employers to provide for the sick and injured in case of sickness or accident of their employees, but the law was very flexible in the way of providing the funds. Perhaps the most unpopular was one providing that the employees be assessed, or, rather, that a certain percentage of their wages be forcibly retained by the corporation, and these small amounts were put in a fund providing for sickness and accident. Another feature was to leave it voluntary upon the part of employees,—those who suffered the assessment received benefit, those who elected to remain out did not. This was a hardship and an injustice to the poorer classes of common laborers receiving the smallest wages, for this class received only enough wages to provide for the bare necessities of life, and they could not set apart even a small percentage of their monthly or daily wages to provide against sickness and accident.

It will be seen that Social Insurance has reached its present status of partial perfectness by a process of evolution, but this is the history of all benevolent movements by society. We are told that the Red Cross had its birth in Berne, Switzerland, I think, about 1863, and its growth was exceedingly slow in this country at least until the early years of the twentieth century, yet the principle involved in Red Cross work was taught by the Man of Galilee, the Savior of the World, when He said, "Do unto others as you would that they should do unto you." We learn, too, that in the early part of the nineteenth century Paster Fliedner and Fredericka Münster, who afterwards became his wife, organized in the quaint little town of Kaiserworth, situated on the banks of the beautiful Rhine, a society which did in a very limited way the same work that the Red Cross is now doing. It received a further impetus when the tall, black-eyed Florence Nightingale took charge of the nursing in Skutari hospitals on the Black Sea at the time of the Crimean War. She was called by the then wounded and suffering soldiers "An Angel of Mercy," for at a late hour in the night when the other nurses were asleep she with her little lamp would flit from room to room, from ward to ward, looking after the wounded and sick soldiers.

The principle of Social Insurance is exactly right, and the employee should not, in the opinion of your committee, pay any part of the premium, but it should fall upon the employer, upon the state, or both. You say it is unfair to the employer to require him to carry insurance for the protection of his employees against accident and sickness, but let me call your attention to

the fact that where the employer does this it never comes out of his income, directly or indirectly, for he adds the price of the insurance to the product which he is manufacturing, and the consumer pays the bill; and this perhaps is right as the burden falls lightly upon the thousands and tens of thousand consumers. Your chairman had a practical experience of this a few weeks since. I employed a contractor by the day to do a certain piece of work. The contractor purchased the material, sent his men to do the work, handed in a bill for all material purchased and for the daily employment of the workmen, then he added to this 12½ per cent as his profit, and again added to this sum, liability insurance for his men. This latter I refused to pay on the ground that I was not insuring his men, that I did not care whether they were insured or not, that was not my lokout, and he alone was responsible for that insurance. It is more than probable, however, that at least nine-tenths of the people for whom he does business pay this liability insurance. So you can see that the burden of Social Insurance did not fall upon this contractor.

Thirty-three of the states of the Union now have laws governing the control and compelling Social Insurance for the protection of the employees, and in many of the states, as in our own, the employer is compelled either to carry insurance or he himself is responsible for it. He may elect, however, to insure his men against accident or to carry the risk himself. One objection to this latter feature is that some irresponsible employers elect to carry their own risks, and when an employee is seriously injured they do not pay the indemnity, and not being financially responsible or having property exempt the injured employee is the loser. This is one of the arguments offered by the friends of State Insurance in favor of the State assuming the risk, and collecting in advance the premiums from all employers.

Social Insurance in this state provides medical and surgical aid as prescribed by the law governing liability insurance, and it provides for the bare necessities of the insured, for example, the old law provided that in case of accident extending over a period of two weeks the insured would receive 50 per cent of his wages, beginning at the expiration of two weeks and continuing until he was well with certain restrictions of limitation. The last legislature amended the law so that the waiting period is one week, and the injured party will receive 60 per cent of his wages commencing at the expiration of the first week and continuing until he is well. Again, of course, with certain restrictive limitations.

In the opinion of your committee the law should be further amended, and provide that if the period of the injured extends beyond one week then the employee should receive 60 per cent of his wages from the date of his injury to the date of recovery. Of course, where it is a permanent injury, disabling an employee for lifetime, there must be some restrictive provision similar perhaps to what exists now.

Old-line insurance companies through their actuary can tell us quite accurately how many men out of a thousand, for example, of a certain class, will die within a given period. Study and comparisons have shown that, notwithstanding all the rules and acts of "Safety First," yet a certain percentage of the employees in a given occupation, for example, railroading, will be injured during the year, and railroad companies and

other corporations are now providing for those accidents as far as the law will permit them in increasing freight rates and passenger rates, and in the case of other corporations in their products sold to the public against this contingency. Therefore, I will repeat again that it is not the corporation, it is not the employee, that pays the premiums, but it is the public, and as an economic measure this is right. Under the common law if a man were injured his employer was liable, provided the condition showed that the employer was at fault, that is, there were some imperfection in his machinery or was failure to put proper guards about rapidly revolving machinery, but if the condition showed that the injured party in anyway contributed to the accident, or if some third party contributed to the accident, then the employer was absolved from all liability.

When we analyze the economical conditions existing in the large manufacturing establishments of today we plainly see that this is wrong. As stated above, a certain percentage of accidents will occur annually amongst a thousand employees, for example, following a certain class of employment, some more hazardous than others.

Shall the State embark in liability insurance? Many of the labor leaders insist that this is right, that the State can collect the premiums and pay the indemnities, and the mere fact that the State is doing this work would be a guarantee that it would be done fairly and equitably.

The argument against State insurance of this kind is that the State would be in competition with private, local insurance companies, and perhaps put many of them out of business; but let it be remembered that liability insurance is for the benefit of the sick and injured employees at the least possible expense in the way of premiums and the greatest possible benefit to the sick and injured. Social Insurance does not exist for the benefit of a few insurance agents, and if the State under the Insurance Department could take on Social Insurance there would not be much objection to it. The State has already embarked in teachers' pensions, but this provides a certain compensation for long and continued services rather than for sickness and accident, and does not strictly come within the scope of this report.

In European countries the Government has taken charge of Social Insurance, at least this was true before the war in Germany, England, Norway, and Russia. All of these countries had compulsory health laws controlled by the Government, but let us examine Social Insurance in reference to the medical profession.

Medicine exists for the relief of humanity from suffering entailed by disease and accident, and the humane physician is interested in the sick and injured, first, for humanity's sake; and there is no class of business and no profession in the world that actually gives to the sick and suffering as much as does the medical profession.

Lodge insurance is a form of Social Insurance where the individuals are assessed, and it is assumed that a large number will pay in their might and that sickness and accident will fall upon but few, but it is never known before hand who those few will be. Some large corporations, for example, mining corporations or lumbering corporations, adopt the same plan. Usually their assessments are compulsory, everyone in their employ must allow a certain percentage of his monthly

wages kept out and put into the sick fund. Where this is done it usually leads to contract practice, and so with the lodges it is contract practice. This is demoralizing to the profession, for there is always some doctor, most often an incompetent one, ready to take the work at a disgracefully low figure for the sake of having something to do. The employees are compelled to accept his services. He gets a salary for doing all the work, and his poor work is a cancer on the good reputation of the medical profession. He avoids a visit if it is possible to do so, no matter how much he might benefit the patient by his visit. There is no objection to a physician taking work of this kind provided he charges the regular fee for his services and charges for what he does, but, otherwise, he is belittling himself, belittling the profession, and doing a great injustice to suffering humanity. The evil feature, therefore, of contract work or lodge work is that the corporation or the lodge will employ a certain physician to do their work just as an old-line insurance company will select a physician to do its work, but the evil is in taking the work for a fixed monthly fee or a yearly salary and promising to do all the work that may be demanded because of sickness or injury of the members of the lodge or corporation.

Your committee believes that Social Insurance has come to stay, and, while we do not know the provisions of the law governing liability insurance in all the states that have adopted such laws, we do know that in our own state the physician called or employed is not limited in his charges. Of course, the companies reserve the right of objecting to exorbitant charges or to too frequent visits if they appear unnecessary. The chairman of your committee and his associates do business for a considerable number of firms, companies, or corporations, as the case may be, and in but few instances have the bills been questioned, and in one case where a bill was objected to as being excessive a nice letter from a member of the firm calling the attention of the company to the expenses of doing business in these war times brought back not only a check for the full amount of the bill, but a nice letter of apology. If, therefore, the profession will denounce and forever eliminate from its ranks contract practice, as that term implies, and lodge practice, which is the same thing, but will, in an honorable, scientific, and thorough manner, do good work and charge a reasonable fee, Social Insurance will prove a great benefit to the medical profession. Indeed, before the establishment of Social Insurance in Mankato the physicians and surgeons did this work, and for a large part of it received no compensation. A laboring man receiving \$2.00 or \$2.50 a day for his labor, paying his house rent and supporting his family out of that, meets with an accident resulting in a broken leg. He is laid up perhaps at least three months, requiring the services of a surgeon for from four to six weeks of that time. The surgeon would decidedly belittle his profession were he to charge that man \$15 or \$20 for his services. The man cannot pay a fair fee, indeed, many of them could not pay the \$15 or \$20. The surgeon consequently donates the work. He does in fact, if not in deed. Such was the condition in Mankato before the Social Insurance came into use, and what was true of Mankato was evidently true of every other city and village in the state. Now the insurance companies pay the surgeon a fair fee for his services, and, more than that, under the present law, the injured man will after

the first week receive 60 per cent of his wages for the support of his family.

Your committee, therefore, wishes to report favorably upon Social Insurance in its relation to the medical profession, and to express the hope that the law may yet be amended so as to give greater benefit to the injured laboring man. Let his indemnity begin with date of injury, providing that the injury exceeds one week. Let the percentage be as high as is consistent with good business principles, which perhaps would not be more than 75 per cent, nor less than 60 per cent.

Your committee does not presume to make an exhaustive report on Social Insurance, and we realize that there are many interesting points in connection with this form of insurance that we have omitted, but, if this new form of insurance develops and becomes more nearly perfect in its workings, this body will have opportunity to hear from others more able and competent than the chairman of your present committee.

Respectfully submitted,

J. W. ANDREWS.
LOUIS A. NIPPERT.

Dr. Richard J. Hill moved that the report be accepted and the committee continued. Seconded and carried.

Dr. Harry P. Ritchie, St. Paul, presented the following report as a delegate to the American Medical Association:

REPORT OF THE DELEGATE TO THE 1917 MEETING OF THE AMERICAN MEDICAL ASSOCIATION

The House of Delegates convened on June 4, 1917, in Hosack Hall, the Auditorium of the New York Academy of Medicine, with Speaker Hubert Works, of Colorado, in the chair. This Association was represented at all the meetings by Dr. W. H. Magie (alternate for your Delegate, Dr. Warren L. Beebe, of St. Cloud), and Dr. H. P. Ritchie, of St. Paul. The first day's work was taken up by reports of the various committees, the chairman in each case reading excerpts from the already printed papers,—a plan which greatly assisted the individual in following the diverse phases of their activities; indeed the presentation in full of all the reports would have consumed so much time as to render such action impossible.

The evident sincerity and devotion to the problems in hand, the vast amount of labor involved in their consideration, and the care in the preparation of the reports, carried them to unanimous acceptance, in each instance. Dr. Works addressed the House, pointing out that under the present laws two days were set apart for the uninterrupted work of the House of Delegates; and this plan most surely promoted thorough work and efficiency. He admonished delegates who might become more intent on personal vantage than on the greater good to the larger number. All during the session he most rigidly held each speaker to the business at hand, and summarily quashed all attempts at fervid oratory, to the discomfort, on several occasions, of the speaker and to the amusement of the members at large. Indeed, it must be a most inconsiderate delegate who rises and asks time of this body without definite purpose, and without careful preparation of his remarks, with a view to conciseness and point.

The committee appointments reveal an assignment of

one of your Delegates to the Committee on Miscellaneous Business. The recipient believes that the compliment was purely geographical, and not personal. It was with pleasure, amidst the little business referred to this committee, that, with other members, he was able to transpose and rewrite a resolution which in its original form contained phrasing implying an evident slur upon the personnel and accomplishment of the medical corps of the army.

President Blue made several suggestions in regard to State Red Cross work, advocated the appointment of a committee to report on the resources of the Association and their utility in case of war, and advised that component societies of the Association consider and act upon the general proposition of medical preparedness.

The Secretary reported that on May 1, 1917, there were 81,501 members in various state Associations which constitute the membership of the A. M. A. Association. The Fellowship of the A. M. A. on May 1, 1917, was 44,010, a net increase during the year 1916-17 of 829.

The report of the Board of Trustees, in the absence of Dr. W. G. Councilman, of Boston, was read by Dr. Thomas McDavitt, of St. Paul, and reviewed particularly matters which pertained to the business and publication of the Association. During 1916 there was issued a weekly average of 67,255 copies of the *Journal*. There was an increase in subscription money receipts during 1916 of \$20,000. This amount was balanced by the greatly increased cost of paper, ink, rollers, and stitching, not to mention labor. The Trustees view with alarm the future expense and balances. An increase in the subscription price, or a decrease in the size of the journal without seriously lessening its value, are both propositions hardly to be considered. It was suggested that some Sections greatly over-balance others in the number and extent of their papers, and it was believed that curtailing of the activities of these would be wise. This suggestion was greeted by such a storm of protest from the Sections interested, and the visit to the House by large delegations, that the matter was dropped, so that the Trustees have still the problem of meeting the increased cost of production.

The reports of the Treasurer, the Auditor, and the Judicial Council are printed in full in the *Journal* of June 9, 1917.

Dr. Frank Billings read the report of the Council of Health and Public Instruction, revealing a most satisfactory work on the lecture platform and in the circulation of pamphlets.

The report of the Committee on Social Insurance, a Sub-Committee of the Council on Health and Public Instruction, is a most exhaustive study regarding incurability, old age, unemployment insurance, and a general summary concerning social insurance.

Those of you who are interested—and it seems that every man in active practice should be, entirely interested in these problems—will find the subject most completely studied, with many comparative data and statistical facts of the trend of opinion and effort in other countries. I was impressed with the necessity of thorough information upon the part of everyone, in order that you may take your stand, because the future will surely bring these questions squarely before you. The value of Dr. Lambert's report will be greatly increased as time goes on.

Dr. Arthur Dean Bevan read the report on Medical

Education. This was most deeply satisfying, and proves a wonderful advance in the preparation of our students for active practice. The entrance requirements have been raised, and the curricula have been extended, and made to conform to higher standards, with the result that the comparative statistics of 1904 to 1916 are most startling. The work of this committee has been based upon the general platform of quality versus quantity.

It was the attitude of the House of Delegates to give credit for this great work to the committee, particularly to the chairman, and a most enthusiastic appreciation was expressed by a rising vote of acceptance, and a vigorous wave of applause. The Chairman, Dr. Bevan was subsequently rewarded by the highest gift of the Association, when he was elected to the Presidency, amid much acclaim. So far as your Delegate knows, no former President has more fully merited this honor, nor rendered greater service to the profession or the people at large, for the reason that the results have placed medical education in America on a par with the best in other countries, if not in advance of the world.

The report of the Committee on Red Cross Work revealed great activity, particularly in the formation of committees,—national, state, and county—with a view of assisting in a multiplicity of duties in the relief of suffering humanity, the amelioration of hardship, and the sweetening of the lives of those in military service.

Many other committees reported. Patriotic resolutions were offered, and discussions were sometimes heated, but always to the point.

The selection of next meeting-place lay between Cincinnati and Chicago with the final choice of the latter city. The time of meeting to be selected by the Board of Trustees.

In the election of officers but one contest developed, and that was in the selection of a western representative on the Board of Trustees.

Thus two full days and one half day at the meeting were devoted in close and constant work on the business and the problems of this great organization.

In conclusion I may say that a delegate must be deeply impressed with the multiplicity of interests and activities; the vast educational, political, and moral influence; and the tremendous financial responsibilities that the organization known as the American Medical Association, assumes, fosters, and develops.

HARRY P. RITCHIE.

Dr. D. N. Davis moved that the report be accepted. Seconded and carried.

STATE MEDICAL JOURNAL

The next order of business was the report of the committee on a state medical journal.

Dr. C. L. Scofield presented a majority report of the committee, stating that the majority of the committee had decided to recommend that the Association do not at this time undertake the publication of a separate medical journal.

Dr. E. W. Buckley presented a minority report, as follows:

MINORITY REPORT OF COMMITTEE ON STATE
MEDICAL JOURNAL

ST. PAUL, MINN., October 10, 1917.

To the Officers and Members of the House of Delegates
of the Minnesota State Medical Association:

In conformity with the action taken at the last meeting of the House of Delegates of the Minnesota State Medical Association a committee was appointed to consider and report on the advisability of the publishing by the State Medical Association of its own journal. The following were named as members of the committee: Drs. R. J. Hill, J. Warren Little, Charles Scofield, George E. Senkler, and E. W. Buckley (Chairman).

The Committee held a preliminary meeting March 23 with all members in attendance. After a general discussion, the Chairman was requested to secure detailed information regarding the publication by various state societies of state-owned journals and such information as would be of value to the Committee.

A second meeting of the Committee was held July 27, Dr. R. J. Hill being the only absentee. After an extended discussion of the information submitted, four members of the Committee voted to report unfavorably on the publication of a state journal at this time. Dr. Hill requested and was granted the privilege of voting, and his affirmative vote was cast by Dr. Little. It was decided that as the Chairman voted in the negative and stated that he would present a minority report that the majority report of the Committee should be made by Dr. R. J. Hill.

While regretting that the Committee was not able to make a unanimous report, I feel compelled to present in a minority report the information secured as a result of the investigation made by your Committee.

It was found that the total number of journals published by state societies number twenty-eight, and as a number of journals are published by several states jointly, the total number of state societies represented was thirty-three. The total number of states publishing transactions in privately owned journals—five, representing eight states, including Minnesota, North and South Dakota.

A questionnaire was sent to the editor of each of the twenty-eight journals, a copy of this together with the replies is attached hereto and made a part of this report. Replies were received from the editors of twenty-four journals. The total number advising publication of a journal by a state society—twenty. The remaining favored the publication of a journal by a state society if the local conditions seemed to warrant such action. The highest amount paid to editors and assistant editors was \$3,600 to the editor and \$1,200 to the assistant editor. The number paying no salaries or compensation was eight. The number in receipt of \$1.00 per capita from the state medical society—eleven. Number receiving \$2.00 per capita—two. Number receiving no per capita—seven.

In the neighboring state of Wisconsin, the journal is furnished to all members of the state society and receives no per capita, the editor receiving \$50 per month and the managing editor \$40 per month and commission on advertising. Any deficit is made up by the State Medical Society. Exchanges and books reviewed are placed in the library of the Milwaukee Medical Society. Editors and managers are selected by a board of publication. The members of the board serve three

years, and are appointed by the Council of the State Medical Society. In answer to question No. 10, "Do you believe a state society with a membership of 1,500 should publish its own journal," the editor answers in the affirmative, and states in answer to question No. 11, "What are the advantages of a state-owned journal over one published by contract with laymen?" "State Society journal is more likely to conform to the requirements of the A. M. A. Journal, even though its income from advertisements is reduced thereby, than a privately owned publication. Furthermore, its affairs belong to the state society and, in my opinion, it helps materially to cement together existing factions in a society—a sort of stabilizer, as it were. Personally, I am of the opinion that since our journal was taken over by the State Society, it has been a tremendous factor in aiding the work of the Society, and in helping organize the profession of the State."

The *Iowa State Medical Journal* receives \$1.00 per capita or more if necessary from the members of the State Society. The journal showed a profit of \$600 in 1916. The editor is paid \$1,500 and the business manager 25 per cent on home advertising. Books and exchanges are under control of the editor. The editor of the *Journal* states that he is in favor of the publication of a state journal by a society with a membership of 1,500, the advantages being the control of the policies of the journal and also that it can be made to represent the profession of the state ethically and otherwise.

In Michigan the journal is furnished free to all members, the State Society paying a per capita of \$1.50. The journal is published at a profit. The editor receives \$1,500. No deficit has ever occurred since the journal was published.

All state journals are members of the Co-operative Medical Advertising Bureau. The Bureau looks after the advertising it places with the several journals, making changes of copy, collecting accounts from the advertisers, and making monthly payments to the publishers. Each state journal renders the Bureau at the end of each month a statement for advertising printed on their orders, and the Bureau agrees to pay them in fifteen days, deducting a commission of 20 per cent and 5 per cent cash discount. The latter is not a charge of the Bureau, as they have already allowed the 5 per cent cash discount to advertisers for prompt payment, the same as the publishers themselves do.

The amount of advertising the Bureau can place with a state journal depends largely upon its location, and its attractiveness to advertisers. Small journals, like those of Florida and Maine, with from 500 to 800 circulation, and away from large centers, do not naturally attract advertisers. Their journals are small, and necessarily they obtain a proportionate advertising income. However, during a period of three years, the Bureau has been able to send each of these journals an average of \$35 to \$40 per month. Their bills against the Bureau for recent months were as follows: Florida for January, 1917, \$44.76; February, \$50.27; March, \$53.26; Maine for January, \$51.24; February, \$62.48; March, \$62.91. Journals with 2,000 or 2,500 circulation, like those of Iowa and Kentucky average somewhat more, as are shown: Iowa for January, 1916, \$138.01; December, \$140.03; January, 1917, \$174.02; February, \$196.52; March, \$188.53. Kentucky for January, 1916, \$65.01. December, \$168.02; January, 1917, \$180.01; February, \$185.75; March, \$218.18. Journals with larger

circulations, like those of Ohio, Indiana, and Missouri, secure more revenue from the Bureau. For the first three months of 1917 their bills are as follows: Indiana, \$188.38, \$199.74, \$209.30; Missouri, \$220.85, \$246.86, \$235.61; Ohio, \$219.91, \$220.83, \$237.43.

These figures will serve to show that the Bureau is now sending many state journals proportionately half as much income each month as is necessary to publish their journals. If the publishers themselves obtain as much more revenue, their journals could almost be sustained by the advertising income.

The strongest reason advanced by the various editors of state-owned journals for the publication of a state journal is the ability to control the advertising columns, as all of these journals limit their advertisements to those that have inclusion in the "New and Non-Official Remedies." Experience shows that privately owned journals, even though officially designated by a state medical society, do not live up to the requirements of the American Medical Association, thus apparently placing the stamp of approval of the state medical society on advertisements which are condemned by the Council on Pharmacy and Chemistry. Attached hereto and made a part of this report is a list of twenty advertisements in the Minnesota State Medical Society Journal which are not accepted by the Council on Pharmacy and which could not be inserted in the columns of any of the twenty-eight State Medical Society journals. In addition there are several products advertised by Lilly & Co., Abbott Laboratories, Schering & Glatz, Parke, Davis & Co., and Van Horn & Sawtell which are not accepted by the Council. A particularly flagrant case is that of Pepto-Mangan, occupying one-half page of the Official Journal and which is also advertised prominently in the Chicago Daily News of October 3, a copy of which is also attached.

As a result of these investigations and in the full belief that a state-owned journal can be published at a profit by the Minnesota State Medical Society, I desire to recommend that the State Society take measures to publish its own journal beginning January, 1918.

E. W. BUCKLEY, M. D., Chairman.

At the conclusion of his report, Dr. Buckley moved that the minority report be adopted. Motion seconded.

After discussion, which was participated in by Drs. Andrews, Earl, Litzenberg, Buckley, and Earl, the motion to adopt the minority report was carried.

Dr. Robert Earl presented the following offer from the Editing and Publishing Committee of the *St. Paul Medical Journal*:

WHEREAS, The Minnesota State Medical Society has appointed a committee to consider the advisability of the State Medical Society owning and publishing its own journal, therefore—

Be It Resolved by the Editing and Publishing Committee that the *St. Paul Medical Journal* be and hereby is offered as a gift to the Minnesota State Medical Association, together with its subscriptions, advertising contracts, and postal privileges as such journal.

Dr. Earl moved the acceptance of the offer. Motion seconded.

After discussion, which was participated in by Drs. Sweetser, Earl, Buckley, and Andrews, Dr. Buckley moved that the matter of publication of a state medical journal be referred to a committee of five with instructions to report details before the final adjournment of the House of Delegates.

Motion seconded by Dr. Smith, and carried.

The President appointed on this committee Drs. W. J. Cochrane, Robert Earl, J. M. Armstrong, E. R. Hare, and M. W. Smith.

Mr. Klein, publisher of THE JOURNAL-LANCET, was granted the privileges of the floor, and asked whether he was to proceed with the publication of the papers and transactions inasmuch as the contract with the Association did not expire before January 1, 1918.

President Workman replied that as the contract of the Association with the Journal-Lancet Company did not expire until January, 1918, unless there was something in the report of the Committee to the contrary, the Journal-Lancet Publishing Company was to go ahead and publish the proceedings.

Dr. Earl moved that the offer made by the Ramsey County Medical Society of a gift of the *St. Paul Medical Journal* to the Minnesota State Medical Association be referred to the committee to be reported back Friday morning.

Seconded, and carried.

On motion of Dr. Hill, the House of Delegates then adjourned to meet at 10 A. M., Friday.

SECOND SESSION—FRIDAY, OCTOBER 12

The House of Delegates was called to order at 10 A. M. by President Dr. H. M. Workman.

THE PRESIDENT: The meeting will come to order. We will have the report of the Committee on Credentials.

Dr. C. S. Scofield presented the following report for the Committee on Credentials (see report on another page).

The Secretary thereupon called the roll, and announced that a quorum was present.

Dr. E. W. Buckley, of St. Paul, arose to a point of privilege, stating that during a committee meeting yesterday in his absence certain statements were made by Mr. Klein, and he moved that the House of Delegates go into executive session, and that none but the members of the House be allowed to be present.

The President suggested that the minutes of the former meeting should be read and Dr. E. W. Buckley withdrew his motion for the present.

The Secretary thereupon read the minutes of the former meeting.

DR. BUCKLEY: I desire to renew my motion that the House of Delegates go into executive session, and that only members be allowed to be present, with the amendment that any member of the State Medical Association shall be permitted to be present.

THE PRESIDENT: You have heard Dr. Buckley's motion, and before I put it I would like to ask Dr. Buckley if he would not be perfectly willing to abide by the section of the By-Laws which reads as follows: The election of officers shall be the first order of business of the House of Delegates after the reading of the minutes on the beginning of the last day of the session. Would you not be perfectly willing to proceed under that section of the By-Laws and then renew your motion after the election of officers?

DR. BUCKLEY: I feel, Mr. President, that it should not be necessary to make a motion that this House of Delegates be limited to the delegates. I feel that no person outside of the House of Delegates, the delegates themselves, should be permitted to be present, and I only wanted to give my reasons for making the motion. I demand protection for anything I may say here, and if, in the opinion of the President, it is not proper for anybody to be present here except members of the House of Delegates and members of the Association I would certainly be willing to withdraw the motion. I would like a ruling.

THE PRESIDENT: The President is not going to rule against you, but we have several gentlemen present who have been invited here on matters entirely foreign to this.

DR. BUCKLEY: I will withdraw the motion for the present under those circumstances.

THE PRESIDENT: The first officer to be elected is a president.

DR. ROBERT EARL: Mr. President, according to custom it is this year the turn of the Ramsey County Society to be honored by the presidency of this Association. Therefore, on behalf of all the delegates from Ramsey county, I wish to nominate a man who is well known to all, a man who needs no introduction because you all know that he stands for all that is highest, best and noblest in the practice of medicine. I feel that the Association at the same time that it honors him will honor itself. I wish to place in nomination the name of Dr. Arthur Gillette, of St. Paul. (Applause.)

DR. W. L. BEEBE: Mr. President, I desire to second this nomination. As a member of the

House of Delegates three years ago, those that are here now who were then present will remember that Dr. Gillette's name was brought up with that of Dr. Rogers, and those who voted for Dr. Rogers at that time announced that the next time it was Ramsey County's nominee we would be very glad to vote for Dr. Gillette. (Applause.)

The nominations being declared closed, motion was made that the Secretary cast the ballot for Dr. Gillette. Motion was duly seconded, and upon being put to a vote was carried.

Dr. O. C. Strickler, of New Ulm, was placed in nomination as First Vice-President for the ensuing year, and on motion the Secretary was instructed to cast the ballot, and Dr. Strickler was declared duly elected.

Dr. E. H. Frost, of Willmar, was nominated as Second Vice-President, and on motion the Secretary was instructed to cast the ballot, whereupon Dr. Frost was declared duly elected for the ensuing year.

Dr. M. J. Lynch, of Minneapolis, was nominated for the office of Third Vice-President. On motion the Secretary was instructed to cast the ballot, and Dr. Lynch was declared duly elected for the ensuing year.

Dr. Thomas McDavitt was placed in nomination by Dr. Scofield for Secretary. The nomination was seconded by Dr. Hill, and upon motion the President cast the ballot for Dr. McDavitt and he was declared duly elected as Secretary for the ensuing year.

Dr. Earle R. Hare, of Minneapolis, was nominated for the position of Treasurer. On motion the Secretary was instructed to cast the ballot, and Dr. Hare was declared elected for the ensuing year.

THE PRESIDENT: Next is the office of Councilor for the Sixth District, now held by Dr. F. R. Weiser, of Windom, whose term expires, and under the Constitution it is necessary to elect a Councilor for the Sixth District.

Dr. F. R. Weiser, of Windom, was thereupon renominated, and upon motion the Secretary cast the ballot, and Dr. Weiser was declared elected to that office.

THE PRESIDENT: We have now to elect a Councilor for the Eighth District, which office is held by Dr. H. F. McGaughey.

Dr. H. F. McGaughey was renominated for the office, and upon motion the Secretary was instructed to cast the ballot, and Dr. McGaughey was declared duly elected.

THE SECRETARY: The next is a delegate to the House of Delegates of the American Medical

Association for two years. Dr. H. P. Ritchie was elected last year for two years, so that he will hold over for an additional year. As Dr. Beebe's term expired last year, we must elect a delegate for two years. It has been the usual custom to elect the alternate of the year before, who was Dr. George Douglas Head, for the two years, unless the Association wishes to do something else. Dr. George Douglas Head is alternate for one year.

Dr. George Douglas Head was placed in nomination for the office by Dr. Scofield, and the nomination was seconded. Upon motion the Secretary was instructed to cast the ballot, and Dr. Head was declared elected as delegate to the House of Delegates of the American Medical Association for two years.

THE SECRETARY: Dr. Magie was elected last year for two years as the alternate, and consequently he has another year, but it is necessary to elect an alternate for two years.

Dr. J. W. Bell, of Minneapolis, was placed in nomination. Upon motion the Secretary was instructed to cast the ballot, and Dr. Bell was declared duly elected as alternate for two years.

THE SECRETARY: The standing committees, of course, are in the hands of the House of Delegates, but, as a usual proposition, are left to the incoming president, also other committees. The Committee on Social Insurance was continued the other day, and the sectional chairmen and secretaries have usually been appointed by the incoming president; but, of course, it is up to the House of Delegates.

DR. J. W. BELL: I move that the appointment of these committees be left to the incoming president.

The motion was seconded, and duly carried.

THE SECRETARY: I think it might be well for some member to propose the usual motion that the officers have the power to sign vouchers for the expenses of this Association at this meeting of the Association and during the ensuing year.

Upon motion, duly made and seconded, it was so ordered.

THE SECRETARY: The location of the next meeting of the Association.

DR. N. H. GILLESPIE: On behalf of the St. Louis County Medical Society and the physicians and surgeons of Duluth, I wish to extend a very cordial invitation to the Association to meet in Duluth next year.

THE PRESIDENT: In this connection I wish to read a telegram I received last evening:

Duluth, Minn., 8:40 P. M., Oct. 11, 1917.

Harper M. Workman, President Minnesota State Medical Association, Hotel St. Paul, St. Paul, Minn.: I have been delegated by unanimous vote of the St. Louis County Medical Society to extend a cordial invitation to hold your next meeting in Duluth. Mayor and city officials join in invitation. Only regret Duluth is dry, but Superior is only three miles away. Sincerely hope you will accept.

C. F. McComb.

Are there any further nominations?

DR. J. W. ANDREWS: I move that the invitation from Duluth be accepted.

The motion was seconded, and, upon being put to a vote, was carried. Duluth, Minnesota, was declared the place of meeting for 1918.

DR. ROBERT EARL: I would like to move that the President appoint a committee to notify Dr. Gillette of his election, and to present him to the joint session of medicine and surgery at 2 o'clock this afternoon.

The motion was seconded and carried, and the President appointed as such committee Dr. Earl and Dr. R. J. Hill.

DR. H. B. SWEETSER: Are the elections finished now? Could we interrupt? The executive officer of the State Board of Health has a resolution to present to us on an apparently very vital question. He is anxious to get away. Could we have a few minutes for that?

THE PRESIDENT: We will take that matter up now. There is also another resolution from another gentleman, but I would like to ask whether those gentlemen would not be perfectly willing, after presenting their resolutions without discussion, that they delay the matters until Dr. Buckley's question is taken care of. Dr. Bracken has the floor if there is no objection from the House of Delegates.

DR. H. M. BRACKEN: Mr. Chairman, the question of venereal diseases is one that is brought up very frequently, and you will remember that Dr. Irvine, of Minneapolis, presented a paper on this subject last year. The question has often been asked here, why does not the State Board help us by its regulations, as it has the right to do under the law as it does in relation to other communicable diseases. The answer always has been that the State Board of Health cannot go faster than the people go, and, further, it needed money before it did any such things as this. The real conditions seem to demand that something be done. A great deal of responsibility is thrown upon the public officials.

I wanted to bring this matter before you briefly; and, I have drawn up in a rough way, this resolution:

Resolved, That it is the sentiment of the Minnesota State Medical Society that a safety zone should be established around Fort Snelling.

That the State Board of Health should be requested to formulate regulations looking to the control of venereal diseases not only in this zone but throughout the entire state.

That the Public Safety Commission be requested to furnish the funds for the successful policing of a safety zone to be created around Fort Snelling and for undertaking the control of venereal diseases throughout the state.

THE PRESIDENT: We have with us Dr. Beard who has prepared a set of resolutions which Dr. McDavitt will be requested to read. Before these can be taken up, either this or the other, I am going to rule that we will take up Dr. Buckley's request.

THE SECRETARY: There was a meeting called by the Medical Defense Committee with a representative from the Safety Commission of this state, a representative from the Board of Regents of the University, the President of the Association, Dr. Mayo, and one or two others, to try to get before the public and the State Medical Association the conditions that exist out at Fort Snelling, and to see if we cannot promulgate some scheme to get it cleaned up.

Dr. Beard was requested to draw the resolutions, and the following are the resolutions that have been sent in:

WHEREAS, The spread of venereal disease is always attendant upon the fact of war and, upon the testimony of chief medical officers, has already reached serious proportions, and is a menace to military and civilian population alike; and

WHEREAS, The extended use of Fort Snelling as a training camp for military organizations is, in part, dependent upon the ability of the State to cope with this condition; and

WHEREAS, The Medical School of the University of Minnesota, under authority from the Board of Regents, has already petitioned the Public Safety Commission to recommend to the Governor of the State the creation of a Bureau of Venereal Diseases, similar to that being organized in California and other states, to be manned, in part, by representatives of the State Board of Health, in part by representatives of the Medical School, and, in part, by representatives of other medical and social service forces; and to be supported, for an initial period of two years, by an appropriation of \$40,000 from the war emergency fund provided by the last Legislature, and

WHEREAS, A number of other organizations, among them the Young Men's Christian Association, the Young Women's Christian Association, the Minneapolis Civic and Commerce Association, the Associated Charities of St. Paul and Minneapolis, the Department of Public Instruction, the Woman's Welfare Leagues of Minneapolis and St. Paul, the State Federation of Labor, the Wilder Foundation, the Woman's Auxiliary of the National Council of Defense and the American Social Hygiene Association have tendered their co-operation

in a state-wide movement in this direction and propose the appointment of a commission by the Governor for its promotion, therefore—

Be It Resolved by the Minnesota State Medical Association, in annual convention assembled, that its earnest endorsement and assistance be given to this undertaking and that these resolutions be presented forthwith to the Public Safety Commission and to the Governor of the State with the request of the Association for early and favorable action, looking to the creation of this Bureau and to the appointment of a medical and social commission to promote its activities.

WHEREAS, The military reservation at Fort Snelling, Minnesota, offers excellent opportunities as a training-camp for the base hospitals of the United States Army; and

WHEREAS, With the increasing mobilization of the medical forces of the Army, and the projected increase in the number of Base Hospitals to be commissioned, additional facilities for such training will be required; and

WHEREAS, The near neighborhood of the University of Minnesota will permit its clinical staff, commissioned or otherwise, to give any aid that may be desired to the Surgeon General's office in the promotion of such hospital training; therefore—

Be It Resolved, That the Minnesota State Medical Association in annual convention assembled, recommends to the War Department of the United States Government the selection of Fort Snelling as a training place for base hospitals and pledges its official co-operation in the promotion of this service at the request of the Surgeon General.

Those two sets of resolutions were desired to be presented before the House of Delegates for their sanction.

DR. F. R. WEISER: I have also a resolution that was handed me to be presented to the Association, which I would like to read.

THE PRESIDENT: Let us put that off until after we dispose of another matter. Now, gentlemen, do you care to take up these resolutions and dispose of them now, before the Chair passes on Dr. Buckley's request?

DR. E. W. BUCKLEY: I want to say one word. I don't want the issue I brought up clouded by mixing it up with the presence of any one invited here or having professional business here at all, and I withdraw my motion until we proceed with the regular business.

DR. J. T. CHRISTISON: Mr. President and Members of the House of Delegates, I desire, as chairman of the Legislative Committee, to make my report, and I beg to offer you an apology for not being here yesterday to do so. The Legislative Committee, consisting of Dr. W. A. Jones, of Minneapolis; Dr. James A. Quinn, of St. Paul, and myself, held several meetings. There were three matters brought before us. One was the bill making fee division a criminal offense. This we were asked to father and did so, and it

was successfully passed by the legislature. The second matter referred to us was the bill pending in the Senate to license the chiropractic practitioner. This bill, after considerable work on our part interviewing the state senators and representatives,—and, I might interpolate, they are a strange and weird lot, with some few exceptions,—this bill was finally pigeon-holed and was lost sight of. The third matter was a bill introduced which, if it had become a law, would have curtailed the powers of the State Board of Health, and practically have emasculated it. This bill we went after very vigorously, and we finally defeated it.

The committee did not find their work particularly edifying or interesting, but they did the best they could, and succeeded in killing these two important bills.

THE PRESIDENT: We will take up the matter of considering the resolution of Dr. Bracken.

DR. J. W. BELL: I would like to ask if the members of the Committee on Resolutions could insert after the amount of the appropriation there, the usual language "or so much thereof as may be necessary."

DR. EARL HARE: I move the adoption of the report just made, Dr. Christison's report.

The motion was duly seconded, and upon vote was duly carried.

THE PRESIDENT: The Chair will ask what action you will take on Dr. Bracken's resolution.

Upon motion, duly made and seconded, the resolution of Dr. Bracken was accepted.

Motion was made and seconded that the resolutions be adopted.

DR. BELL: The usual wording is to add after the words of the appropriation, "or so much thereof as may be necessary."

DR. R. O. BEARD: I should like to say in presenting these resolutions, that I not only am representing the University of Minnesota, but I am representing a large part of the organizations, medical and social, which yesterday held a meeting for the purpose of supporting this movement, and I was requested at that time to act as chairman of the body for the organization of this general support, and I am presenting these to you in the double capacity. As far as the University is concerned, relative to the amendment that Dr. Bell stated, we would be glad to have it go in. Undoubtedly, before the Safety Commission makes a request of that kind, the expenditure of money will be safeguarded. In proposing a creation of this bureau, we are proposing something in direct line with the work of the

State Board of Health. We are going to do the same things that Dr. Bracken's resolutions proposed, and provide for the prevention and treatment of venereal disease and for the protection of the military and civil population.

DR. BELL: I am heartily in favor of the resolutions, but it seems to me that the usual wording should be put in there. This body in making that request, I think should insist upon the proper wording of that appropriation. I again renew my request that it be so amended.

DR. BUCKLEY: I do not like to find myself in disagreement with Dr. Bell, but I feel very strongly on the subject. I happen to be a member of the committee that is working in very close connection with the War Department training-camp activities. We know that St. Paul and Minneapolis lost the training-camp on account of the laxity of the control of vice conditions in the two cities, and we passed these resolutions, all of which are worthy and hold up the hands of the State Board of Health. These different committees are working with us, and, instead of saying "as much as is necessary," I would say, "or more if necessary." We ought to go further. We are all familiar,—I do not want to rehearse those conditions. The United States authorities were perfectly aghast when the commissions from France and England came to this country and showed the conditions in Europe. The chief surgeon of the Austrian army says that sixty divisions have been retired from the front on account of venereal diseases, and the men are voluntarily trying to contract venereal diseases so as to obtain hospital asylum at the rear for at least two months; and the authorities are now advocating the establishment of a venereal department. They are treating lots of soldiers there, so they will not give the disease to their wives. The conditions are appalling. It is bad enough among our own troops, as I happen to have knowledge, so that, instead of limiting the appropriation of money, we ought to say, \$40,000 or as much more as may be necessary.

THE PRESIDENT: Any further remarks? Are there any seconds to these suggestions of Dr. Bell and Dr. Buckley?

DR. EARL HARE: I rise to the point of order. We are all talking out of order, inasmuch as there is a motion before the house to adopt a set of resolutions. I move the original question.

THE PRESIDENT: I think your position is well taken.

DR. H. B. SWEETSER: I think the resolution has been passed.

THE PRESIDENT: Yes. The second resolution was in regard to the reservation at Fort Snelling as a base hospital. Any further remarks on that?

Upon motion, duly seconded, the resolution was adopted.

DR. F. R. WEISER: The following resolution has been handed me to read to this body:

WHEREAS, Our country being at war against a nation which has defied international law and the laws of humanity, it becomes necessary that all true American citizens stand by and support our Government in this conflict for right and democracy, and

WHEREAS, One of our members of the Minnesota State Medical Association, Dr. L. A. Fritsche, did as a public officer preside at a public meeting on July 25 last at New Ulm, Minn., in which he lent his aid in creating a disloyal sentiment among the people in his community in this time of national and world peril, and by so doing he has, as a member of our State Association, brought disgrace and insult upon us; therefore—

Be It Resolved, That we as American citizens and physicians of loyal Minnesota hereby express our disapproval of his unpatriotic acts, and that a copy of this resolution be sent to him and spread upon the minutes of the Association.

DR. C. L. SCOFIELD: I would like to ask in this connection whether, in the hearings before the Public Safety Commission and other things that have come up since, Dr. Fritsche has changed his position in this matter, before this is considered.

THE PRESIDENT: The Chair is not able to answer.

DR. J. W. ANDREWS: I am thoroughly American. There is not a drop of disloyal blood in my veins, but my feeling is that this is not quite the time to adopt a resolution of that kind. I do not want to vote against it, and I do not want the House of Delegates to vote against it, but I wish it might be withdrawn. Dr. Fritsche's case now is in the hands of the Safety Commission, and when they have rendered a decision then, I think, it will be time for this Association to act. I am not defending Dr. Fritsche at all. I do know this, that he is thoroughly repentant, and he is as loyal now as any of us, and regrets what he has done. It seems to me it would be wise to let the matter pass until the Safety Commission has rendered its verdict, and then, if the verdict be against him, the State Medical Association ought to lose no time in expelling or suspending him. But to take the matter up now, before the Board has passed upon it—let us assume that possibly the Board will exonerate him, we do not know—then it would place us in a bad light if adopted

and placed upon the minutes of the Association at this time.

THE PRESIDENT: The Chair thinks that Dr. Andrews is mistaken in one premise. Does the resolution provide for any action so far as expulsion or discipline is concerned? That belongs to his local society, and is a matter that this body cannot pass upon. We can vote and adopt this resolution of censure. We could not go any further; we cannot discipline him.

DR. W. L. BEEBE: I would like to second the motion. Under the proposition that Dr. Andrews has been talking about, this Association could not take any action until next year, and it is barely possible that the expression of the Association as to a censure of this gentleman would have something to do with the committee that is to take action upon his case. If he is thoroughly repentant, such a motion as this would help him in his repentance.

DR. W. A. DENNIS: I would like to say a word along the line of what Dr. Andrews said. I think this is premature. I believe we ought to be sure of our ground before taking the action. We ought to be extremely sure before passing this vote of censure. We would not like to have it brought before this House and be defeated, for it would have a very bad effect. Therefore, I renew the request that the resolution be withdrawn at present. You can act upon it another time, even next year, and I think it would be wise.

DR. H. B. SWEETSER: I would make a substitute motion. We have, I think, in our Board of Councilors, a sort of board of censors, and I would move that this resolution be referred to the Board of Councilors at their next meeting, following the decision of the Safety Commission, and that will protect us as a society, and will keep us from doing something that we may regret afterwards, and still we shall maintain the dignity of our Association.

DR. WEISER: That would be very acceptable to me.

DR. ANDREWS: I will second the substitute motion. The motion, upon being put to a vote, was carried.

THE PRESIDENT: What shall we do with the report of the Committee on Necrology? (See report on another page.)

Upon motion, duly seconded, the report was accepted.

THE PRESIDENT: The report of our member of the National Legislative Council. Is it ready?

DR. W. L. BEEBE: I will read the report:

REPORT OF THE MEMBER OF THE NATIONAL
LEGISLATIVE COUNCIL

To the House of Delegates of the Minnesota State Association:

The thirteenth annual conference of the Council on Health and Public Instruction, and the Council on Medical Education, was held in Chicago on February 6 and 7, 1917.

Both of these conferences were the most interesting, instructive, and practical of the many that I have had the honor of attending as your representative. Owing to the illness of the Chairman of the Council on Health and Public Instruction, Dr. Frank Billings, our Dr. H. M. Bracken presided.

The first paper, and one of the most popular ones, as shown by the general discussion, was by Dr. George E. Vincent, formerly of Minnesota. Subject, "Public Health-Training in Universities." Dr. M. J. Rosenau, Professor of Medicine and Hygiene in Harvard, read a most interesting paper on "Public Health Instruction in Medical Schools."

These two papers were discussed by such leading men as Dr. Victor Vaughan, of Michigan, Dr. Cantrell, of Texas, Dr. Hemenway, of Illinois, Dr. Boyd, of Iowa, Dr. Thayer, of Portland, Me., Dr. Abbott, of Philadelphia, Dr. Dodson, of Chicago, Prof. E. O. Jordan, of Chicago, and Dr. Victor G. Neiser, of New York.

But the paper of the meeting, to my mind, was one entitled "The State Regulation of the Practice of Medicine as an Executive Problem," by Hon. James M. Cox, Governor of Ohio. I want to pass one of his good stories on to you: "I never think of one's loyalty to his own state without being reminded of a story they tell of Lloyd George, one of the greatest human intelligencies in the world. He was making a speech, and spoke of home rule for Ireland. Some one in the audience said, 'Yes, and home rule for Scotland.' Then a Welchman inquired about home rule for Wales, and a wag in the audience (you find a wag now and then in England) yelled out, 'Why not home rule for hell?' Lloyd George was considerably fussed by the demonstration caused by this incident, but, with that self-possession characteristic of him, he said: 'Well, I believe in a man standing up for his own country.'"

Dr. William O. Thompson, President of Ohio State University, though not on the regular program, gave a very entertaining talk on "The Fundamental Principle of Education," and "Education Is a Panacea for All Human Ills, If You Will Let It Work Long Enough."

Dr. John A. Robinson, President of the Illinois State Board of Health, and Dr. David H. Strickler of Denver, discussed these two papers.

W. L. BEEBE.

Upon motion, duly seconded, the report was accepted.

THE PRESIDENT: Is there any objection to the ruling of the Chair that we now proceed to the executive session? I will request those not members of the House to retire.

DR. H. B. SWEETSER: If the only question to come up, is something about our magazine, and that Dr. Buckley has suffered some criticism, I do not know why the people we want to hear from

should be debarred. I think we might have it in open session.

THE PRESIDENT: The point is this, the House has the right to vote whether it will go into executive session or not, and the Chair took that position after one of the delegates made that request that I would grant it. If there is any doubt about it, I will put that to a vote, and ask this House of Delegates whether it will go into executive session or not. Those in favor of going into executive session, will please signify same by saying aye; contrary by the opposite sign. It is carried.

DR. J. W. ANDREWS: I would like to ask what you mean by executive session, to go into committee of the whole?

THE PRESIDENT: Dr. Buckley asked that we go into committee of the whole.

DR. E. W. BUCKLEY: In the first place, I want to say that I do not understand that the House going into executive session means that it resolves itself into a committee of the whole. It simply means that it is the same as clearing the gallery of any deliberative body, and as we do not have a gallery it means clearing the floor. My request was that this body go into executive session and limit its attendance to the members of the House of Delegates and the members of the State Medical Association; and I do that so as not to infringe upon the persons who have been invited to meet with us. I do not think it is proper that any layman be entitled to be present in a meeting of the House itself. The man stated the other day that we would be forced to go into court for things I said. If we are forced to go into court for things we say, let it come from a House of Delegates, and not from outsiders. That was my purpose for having it limited to the members of the House of Delegates and the members of the State Association. I think it was so understood, and not to go into committee of the whole, because I do not wish to reflect upon the presiding officer.

THE PRESIDENT: If there is nothing further, we will proceed with the regular business.

DR. SWEETSER: I have here a report I would like to make.

REPORT OF THE COMMITTEE ON HOSPITAL EXTENSION ON THE UNIVERSITY CAMPUS

October 3, 1917.

DR. H. M. WORKMAN,
Minnesota Medical Association,
Tracy, Minnesota.

Dear Doctor: Your Committee, consisting of Dr. E. L. Tuohy, Chairman, Dr. J. G. Cross, Dr. H. B. Sweetser, Dr. Carl Smith, and Dr. O. C. Strickler, to

act as a Committee of the State Association in conferring with a Hospital Committee of the University concerning the matter of hospital extension on the Campus, beg to report as follows:

Several meetings were held during the winter, all of them in Minneapolis. The early meetings were poorly attended on account of inclement weather. One meeting was held in conjunction with a special committee of the State Medical Alumni Association.

The preliminary suggestions for hospital extension as offered by the University Hospital Committee were used as a basis for the discussion (a copy of their plan is attached to this report). By reading of that plan it will be seen that differences of opinion have existed between members of the University faculty and the profession at large. The activities of your Committee have been centered about an effort to harmonize these differences.

At the last meeting held by your Committee with the Hospital Committee of the University faculty, the chief points of difference of opinion were taken up serially, and a free discussion indulged in. These are given different headings, and discussed as follows:

1. *The Matter of Payment to Whole-Time Professors on the Medical Faculty*—It was pointed out that any incomes the hospitals of the University might have from per-diem patients or pay-patients should have nothing to do with the fund from which these whole-time professors should be paid. It was maintained by the Hospital Committee that the plan provides for the payment of these clinical men by supplementing their salary paid by the State from the income of a proposed endowment. It is specifically stated that no money derived from pay patients is to be paid directly or indirectly to clinical teachers. Any funds that may in the future come from such a source are to go into a so-called "Clinical Research Fund."

Both committees seem to be in agreement upon the general principle of augmenting the regular University salaries by the income of a special endowment fund, if that can be procured; the plan should meet with no serious objection.

2. *The Question of Further Enlargement of Hospital Facilities on the Campus to the Extent of About 550 Beds*.—The Hospital Committee is of the opinion that this number of beds are necessary on the Campus regardless of other facilities which might be provided through a greater utilization of the municipal hospitals of the Twin Cities.

The general principle of better utilization of the municipal hospitals was agreed upon unanimously by both committees. At the same time the Hospital Committee was firm and unanimous in the statement that regardless of how fully their own wishes and desires could be brought about in this matter, they still held to the need of hospital extension on the Campus to the extent of 550 beds for present uses and future development.

The general method of securing these hospital beds through endowment was discussed. It was pointed out and agreed by both committees that this represents a departure from the original plan of hospital extension. The word "endowments for building" should preferably be changed to "gifts for building." Granted that this method was to be followed, it would indicate a tendency to get away from a purely state institution toward that of a combination. It was pointed out that this might possibly work toward a tendency for the

state legislature, if the plan worked out successfully, to place the burden of future general development of the Medical School upon private philanthropy. The general principle, however, of securing philanthropic contributions for the extension of hospital facilities was agreed upon tentatively by both committees. The Hospital Committee was strongly of the opinion that an advantage would exist in the administration of such endowment funds by the Board of Regents; that possibly large sums obtained from private sources would thus be used for the advancement of medical education and research in the interests of the people of the state. It was suggested that these funds under State control would be safeguarded for the interests of the public better than those controlled by strictly private or endowed institutions.

3. *The Per-Diem Plan of Providing Maintenance*.—This general principle was discussed fully, and, in view of the alarming proportion to which maintenance grows in all public institutions, the general principle of inducing patients to pay at least in part for what they get was agreed to by both committees.

It was understood that the present Elliot Memorial Hospital, with approximately 200 beds, must, by the legislative act of acceptance of the gift, always remain free.

4. *Pay-Patients on the Campus*.—This proposition offered by the Hospital Committee met with general disapproval from the State Association's Committee with the exception of a statement made by one of the committee, Dr. O. C. Strickler, to the effect that, in conference with his confreres who had opposed the idea, he personally felt that this plan could be utilized to the extent of bringing into the University Hospital for study, patients of a type which might not otherwise be represented. The Association's committee otherwise feels strongly that this plan should not be utilized. The arguments in favor of it have previously been amplified by the Hospital Committee; many others have been offered against it, and only a few of these will be summarized here:

(a) It is a method under which the University will enter into active competition with medical practitioners licensed by the State, and some graduated by its own university.

(b) This competition will be unfair because the average individuals in the state will conclude that the type of service given will be better than that offered by other private physicians and private institutions under the direction of medical men of equal experience and attainment. The mantle of approval and appointment to the University position will carry with it an element of prestige detrimental to a degree to competing physicians.

(c) In addition to the advantage of the grouping of specialties, there will be provided laboratory facilities and expensive equipment at State expense.

(d) While it is stated that this plan would be safeguarded and the number of beds will be reasonably limited, it still follows that the practice of these men within the University will not easily limit itself. It cannot be easily limited to those patients within the hospital proper and occupying the hospital beds. These patients will return from time to time; their care will necessitate the use of State-owned equipment at all times.

It would appear that the chief advantage of having these pay-patients is to bring into the institution certain types or classes of individuals who would not other-

wise come. The other advantage of accumulating a special "clinical research fund" would seem not to be of unusual importance, since, if it is possible to secure a large enough endowment fund to augment the salary of whole-time teachers, it should also be possible to utilize the same source to expand the opportunities for clinical research.

E. L. TUOHY (Chairman).

H. B. SWEETSER.

O. C. STRICKLER (with exceptions reported).

J. G. CROSS.

A PLAN FOR THE CLINICAL DEVELOPMENT OF THE SCHOOL; FOR THE EXTENSION OF THE UNIVERSITY HOSPITAL; FOR THE SUPPORT OF FULL-TIME CLINICAL TEACHERS; AND FOR THE PROMOTION OF GRADUATE AND RESEARCH WORK, BY A COMBINATION OF STATE APPROPRIATIONS WITH ENDOWMENT DERIVED FROM PRIVATE SOURCES

The Committee believes it possible to compose the differences of opinion which obtain with reference to the details of this important development. It believes that members of the faculty and of the medical profession, who are broadly interested in this educational problem and who desire to place the School upon a par with other first-grade colleges and to make Minnesota a center of medical education in the Northwest, can find a common ground in the following proposals, which it unanimously presents:

1. That the slowly obtainable support of the School by the State be supplemented by a fund to be raised by private subscription (a) for the completion of the hospital system at an early date; (b) for an endowment fund which shall be used, in part, for the payment of full-time clinical teachers and research workers; in part for an increase in the number of teaching fellowships.

2. That the State be asked to continue and to add to the support of the hospital to the extent, at least, of the adequate maintenance of the free-patient service.

3. That eighty per cent of the further increase in the number of hospital beds derive support from per diem charges on an approximate per capita cost basis.

4. That twenty per cent of such increase in the number of hospital beds, or fifteen per cent of the entire hospital capacity, be devoted to pay patients, under University control, in the service of full-time clinical teachers.

5. That the per diem and hospital charges derived from all patients be added to the support funds of the hospital; that the professional fees derived from University pay patients be placed in a fund to be used for clinical research; and that no fees derived from University patients be paid to clinicians.

6. That the salaries of full-time clinical teachers and research workers, in adequate amount, be provided, under direction of the Board of Regents, from the support funds of the University, reinforced by the endowment funds.

7. That stipends for additional teaching fellowships be provided from the support and endowment funds of the School as rapidly as these will permit, and as the opportunities for the work of such fellowships shall develop and the demand for them by suitable candidates will justify.

The Committee has studied the possibilities of finan-

cial support for such an undertaking and is encouraged by the prospects of success. It proposes the continuance of its efforts with the definite acceptance of this plan of development. It sees in the substantial growth of certain great centers of medical education in the country, reason to press the campaign for such a firm establishment of this school at the University of Minnesota. The unification of medical teaching in the state, the hospitable attitude of the State Board of Medical Examiners toward educational progress, the sympathy of an enlightened and a financially capable community, the co-operation of the medical profession, and the geographical situation of the University, are alike favorable to a successful issue.

Motion is made and seconded that the report be adopted.

THE PRESIDENT: The Chair wants to make an explanation of the appointment of this committee. Last fall, a short time after the election, I received a telegram to come to Minneapolis and meet in conference, a faculty committee of the University of Minnesota, and I did so. They then asked if I would not appoint a committee to meet this faculty committee to talk over the matter of a per-diem hospital on the Campus. Pursuant to that request, I appointed this committee, whose report you have.

Are there any remarks on the committee's report?

DR. J. W. ANDREWS: If I understand it right, the committee does not recommend any per-diem charge. The committee is against it?

DR. H. B. SWEETSER: Not exactly that: the per-diem patients who go there pay simply hospital expenses. Although that is sometimes dangerous, still I think the report shows that that part might be accepted without any great danger. The main thing is the acceptance of what they call pay-patients, which is different from per-diem patients. The pay-patients will come from any class that we have in the state, the wealthier, the better perhaps, and the objection that we have is this, or the objections are these:

First, that these patients go there to a clinic, maintained by the Medical School with all the equipment used for diagnostic purposes. The expense of this is borne by the State, and this is, therefore, a direct competition with the other practitioners in the state, and is unfair to that extent. If we have a group of physicians who come together to maintain a scientific clinic, it requires the expenditure of a great deal of money, and that money has to come from the physicians. That is provided by the State to an unlimited degree for the men who are connected with the University.

Second, it is proclaimed over and over again to us in the committee and to everybody outside that

these men are especially adapted for making a diagnosis of any kind of a case, and they will attract patients of all kinds and any degree of wealth there. They have stated that the persons who are connected with these, would not get any fee directly from it, but the moneys collected go into what they call a "research fund," and out of that these men are paid an increased salary. We fail to see where the difference is between the patient paying a fee and the University taking the money and putting it in this fund.

DR. EARL HARE: We have it upon the authority of a member of the faculty, who is also a member of the Administrative Board, that the question of pay-patients is now in abeyance with the Board of Regents, that, when the question was put up to them, they refused to sanction any pay-patient on the Campus, and that, so far as the Administrative Board is concerned, the question will not be considered at this time. We have it in the Alumni Association, that the question will never be considered until the opinion of the alumni has been asked, and the alumni have been heard on the question. So I think so far as pay-patients are concerned we need not feel any special concern at this time.

THE PRESIDENT: As I stated when I announced how this committee was appointed, this committee was never authorized by this House or by the Association in any way, but upon a request from the faculty, your President thought it was right to appoint such a committee, and he also feels that it was right that you should have the report of the committee. Now, it is up to you to take action, if you care to take any on this report.

DR. E. S. MUIR: I move you that this report of the chairman of your committee be accepted, and the House of Delegates go on record as endorsing the report, and recommending that it be considered by the Board of Regents of the University when this question comes up before it.

DR. HARE: I think the motion I made covered the point, and it was seconded. The question is before the House to accept the report, and, if we accept the report, we shall do exactly what Dr. Muir stated.

Upon being put to a vote, the motion was carried, and the report accepted.

THE PRESIDENT: There is one other matter that the Chair desires to bring before you. It has been stated that possibly the Chair made a mistake yesterday, and that he should present to you some of the proceedings of the House of last year, and then it will be for you to rule whether

the Chair was right in taking the action yesterday, or omitting the action yesterday.

DR. J. M. ARMSTRONG: I have a report to make. Will it be proper to make it now?

THE PRESIDENT: Yes, I will let this matter follow your report.

DR. ARMSTRONG: An editing and publishing committee was appointed, consisting of five members, and the following was their report:

REPORT OF THE EDITING AND PUBLISHING COMMITTEE

Your Committee recommends (1) That an Editing and Publishing Committee consisting of five members be appointed by the President of the Association, two members from the Hennepin County Society and two members from the Ramsey County Society, and one from the state at large. That the executive committee of the Hennepin and Ramsey County Societies shall each recommend to the President of the State Association the names of three of their members from whom the President shall choose his appointees, each member of the Committee to serve five years. The members of the first Committee to be appointed as follows: One member for one year, one member for two years, one member for three years, one member for four years, and one member for five years. Thereafter one member shall be appointed each year for a term of five years.

(2) That the Editing and Publishing Committee shall have full control of the editing and publishing of the journal, and the appointment of the editors and business manager, and shall determine their compensation.

(3) That the State Association pay the Editing and Publishing Committee the sum of one dollar per year per member in consideration for which each member of the Association shall receive a copy of the journal for one year.

(4) That an associate editor be appointed for each Councilor District.

(5) That the profits derived from the publication of the journal be paid into the Treasury of the State Medical Association and any deficit arising from the publication of this journal be paid from the Treasury of the Association.

(6) That the offer of the Editing and Publishing Committee of the Ramsey County Medical Society to turn their journal over as a free gift to the State Medical Association be referred to the Editing and Publishing Committee to be appointed.

WM. COCHRANE (Chairman).

A. E. SPALDING.

EARLE R. HARE.

ROBERT EARL.

J. M. ARMSTRONG (Secretary).

I would like to explain as to the first paragraph, that the Editing and Publishing Committee consists of five members to be appointed by the President of the Association, two from Ramsey, two from Hennepin, and one from the state at large. It seemed to the committee that it is quite possible that this committee of five would

have to meet pretty often, and it would be better to have the committee so distributed that they could get together and also that, since members of the Ramsey and Hennepin Societies have had experience in publishing medical journals, and it is quite probable it would be published in the Twin Cities, it would be a wise thing to put that in. The clause as to the executive committees of the Ramsey and Hennepin County Societies, recommending the three members to the Chair, was placed in there for the same reason, that they could recommend some one who had experience along these lines.

As to the second paragraph, I think very shortly, perhaps, the journal could support itself, and make money, but in the beginning it seems to me and the committee that it would be wise to put that in.

The fourth paragraph was put in for the reason that if complaint is made from other parts of the state or any complaints against this committee of five, there would be a body that could be called together by the President of the State Medical Association to determine the policy, etc. The offer of the Ramsey County Medical Society in regard to the *St. Paul Medical Journal*,—we thought the committee to be appointed was the proper body to take that up.

THE PRESIDENT: These resolutions will have to be referred to the Council, for the reason that the By-Laws and Constitution provide that the Council shall provide for and furnish the publication and distribution of all proceedings, books, and memoirs of the Association, and have authority to appoint editors and such assistants as it deems necessary; and, unless you are going to change this constitution, a motion to which would have to lay over twenty-four hours, the House could not take any action on this except to refer it to the Council, and I will so refer it.

DR. HARE: I rise to a point of order. If I remember correctly, this committee was ordered by the House of Delegates to be appointed by the President, and was so appointed with instructions to report at a definite time. The committee has so reported. If that be the case, is it not proper for this body to act upon the report of the committee, either to accept or reject the report?

THE PRESIDENT: I think that, so far as a part of that report is concerned, is true. I do not see why you should violate the By-Laws because the committee has gone outside of any authority that this House gave them. If the House wants to accept that report it can do that, but there cannot be such committee appointed to take the place

of the Council. I do not think that this House, or any other body, can do that, because the Constitution provides it must go over twenty-four hours.

DR. HARE: Would it not be possible to accept the reports, and refer it to the Council?

THE PRESIDENT: That would be a very good motion.

DR. HARE: It seems to me out of courtesy to the committee the House ought to accept the report.

THE PRESIDENT: That is very well.

DR. J. M. ARMSTRONG: I am not the chairman of the committee. I was made secretary of this committee. This committee, day before yesterday, decided by unanimous vote to submit this report at ten o'clock Friday morning. It seems to me that the House can accept this report or not accept it.

THE SECRETARY: I do not think there is going to be any difficulty about this report. Of course, all these matters must go to the Council, and I think the proper way would be to accept this report and refer it to the Council for action, because there is going to be no difficulty between the Council and this committee report at all, and then it will go through the proper channels.

DR. E. W. BUCKLEY: I think the suggestion of the Secretary is a very good one, and I therefore move that the report of the committee be adopted, and that the report be referred in accordance with the By-Laws to the Council with the desire of this body expressed that the Council adopt the recommendation of the committee in conformity with the action taken by this House on the general proposition of the publication of a state journal.

DR. W. A. DENNIS: My understanding is that the members of the Council are by that fact members of the House of Delegates. Then the Council is represented in this meeting.

THE PRESIDENT: Yes, sir.

DR. W. A. DENNIS: I should suppose if this meeting takes any action that the Council would be represented, would it not?

THE PRESIDENT: It may be represented, but it would not be represented by the majority of its votes; it would not be decisive.

DR. DENNIS: They are supposed to be here.

THE PRESIDENT: They are supposed to be, but they may not be. This action must be taken.

DR. ROBERT EARL: I wish to second Dr. Buckley's motion.

The motion, being put to a vote, was duly carried.

DR. EARL: We now understand that this House of Delegates in executive session has instructed its Councilors to carry out practically and substantially the report offered by this committee?

DR. R. J. HILL: I do not understand that the House of Delegates can instruct the Councilors what to do. I raise that issue. The Councilors are entirely independent.

THE PRESIDENT: They are absolutely independent.

DR. J. W. ANDREWS: Were not the Councilors created by this body?

THE PRESIDENT: No, sir.

DR. ANDREWS: We have been electing members this morning.

THE PRESIDENT: We elect them, but they are independent.

DR. BUCKLEY: I would like to have the reporter read my motion. (Dr. Buckley's motion was read by the reporter.)

THE PRESIDENT: The ruling of the Chair has possibly been questioned, and I have been asked to read the resolutions offered last year, offered by Dr. Litzenberg:

There seems to be a general consensus of opinion that what is desired in this state is a better medical journal. There are limitations to the improvement of the present journal, largely financial perhaps. It would seem from the consensus of opinion of the representatives of the *St. Paul Medical Journal*, the representatives of *THE JOURNAL-LANCET*, and others who have expressed opinions, that we ought to get together and publish one journal. We have had submitted to us a proposition from the Ramsey County Medical Society, and I would, therefore, move that all matters in regard to a state medical journal be referred to a committee of five; said committee to report to the House of Delegates for final consideration at the next annual meeting; the report to be previously furnished to every component society for consideration and recommendation. Motion was seconded.

Dr. Farr: I move as an amendment that this committee be given six months in which to make its report before the annual meeting of the society. Amendment seconded.

The original motion as amended was then put and carried.

Now it is said that this committee did not do as they were instructed, and the entire proceedings were not legal and that the Chair should have so ruled yesterday. It is submitted to you for your consideration.

DR. BUCKLEY: The committee was well aware of that instruction, and, if any fault lies with the committee in its failure to carry out its instructions, I think the chairman is to blame. The meeting of the committee was held, as I stated in my report, on the 23rd of March. I was in-

structed at that time to secure the information that was presented to you in my report, and, if anybody ever had anything to do with getting replies from twenty-eight editors, he will know that you cannot get them in a week. The matter dragged along, and it took two or three additional requests to get replies from twenty out of the twenty-eight.

Failure of the committee to report to the component societies was due to no fault of the committee, but was due to the fault of people from whom the committee asked information before being able to formulate a report. It seems to me that the instruction of the House to the committee to make a report was in the nature of an instruction, and not a part of the original motion, not a part that made the action of the committee valid in so far as this House of Delegates was concerned. The committee is open to censure perhaps for not complying with the instructions of the House of Delegates. If that is true, I want to assume the full responsibility for failure to do so, owing to the fact, as I say, that the committee did not meet until March. In January I was taken sick, and was sick for a month. I want to take the responsibility for the failure. The failure of the committee to make a report to the component societies of this House of Delegates is one for which, of course, this House of Delegates has full power to hold us to account or to condone.

The action of the committee, or the report of the committee, is it seems the principal thing at issue. The failure to carry out one of the minor instructions, it seems to me, is a technical one, of which those who are in the minority in the vote of the House of Delegates want to take advantage. If this House wants to do this, I bow in submission to the will of the House. I want to assume personal responsibility for the failure of the committee or any failure to do any of the work that was necessary.

THE PRESIDENT: It was the Chair's idea it was simply a technical matter yesterday.

DR. H. B. SWEETSER: Even if the House of Delegates either censures or condones the action of the committee, still the motion says that the report was to be previously furnished to each and every component society for consideration and recommendation. I do not believe any component society—and the component societies are the fundamental units of this Association—has been given any opportunity for consideration and recommendation on this very important subject. The amendment of Dr. Farr was that this com-

mittee be given six months in which to make this report before the annual meeting of this Association. There was a whole year, and that report should have been submitted in some way to the component societies for their consideration and recommendation. None of them have considered it or recommended. Further than that, we have a committee appointed of five persons who went into this thing very carefully. That committee presented a majority report and a minority report. The majority report was made by four-fifths, and they had all of the data collected before them, and after consideration of the data, four members of the committee decided that the action was not good at this time. This majority report was very badly and very poorly put before us. They simply got up and said, "We don't recommend it." The minority report was very carefully gotten together. It was presented to us in the most beautiful manner, in the most eloquent way, by a very eloquent gentleman, and, of course, accepted. The fault of the whole matter taking up all our time, is the poor report that the majority made, and still it stands before us that four-fifths of this committee, with all the data before them, reported that they were opposed to it. Now, that committee should have submitted to the component units, fundamental units, of this Association, the data and reports, for their consideration and recommendation, possibly to be referred to local committees, to see whether it was good or bad at this time. Personally, it does not make any difference to me whether we have a journal of this kind or a journal of another kind, or whether we are going in the hole or not, but it seems to me that this House of Delegates—

THE PRESIDENT: There is no motion before the House at all.

DR. HARE: I wish at this time to resent what Dr. Sweetser implies, after listening to the majority and minority reports of this committee, that we were unable to judge for ourselves and that we were carried away by eloquence rather than facts, for, as intelligent men, we ought to listen to facts, whether well or poorly presented, and not be swayed by eloquence or the lack of eloquence. The minority report, as I listened to it, presented the facts as gathered by the committee, and these facts were exceedingly and extremely convincing to me, as well as to other members of the House of Delegates, as evi-

denced by the result of the ballot which followed. I think it is no imputation on the members of this committee that this House has accepted the minority report. There is a widespread feeling that we want a journal of our own, and we have simply expressed that desire. I think it is only a difference of opinion as to the way to work it out, and I feel, even though the consideration of this question be technically incorrect, that, if the matter had been submitted to the societies and the facts which have been submitted to us, had been submitted to the component societies, that there would have been no difference in the ballot as it stands today. I do not see why we should stand on this technical ground at this time.

THE PRESIDENT: There is no motion before this House. Unless there is going to be a motion made, we shall proceed to the next order of business. This talk is just a waste of time to the members of the House.

DR. ANDREWS: I rise to a question of privilege. I understand you made the point that the Chair had been accused of ruling wrong, and that the question before the House now is whether the Chair did so or not,—whether this is vital or not.

THE PRESIDENT: That is the point exactly.

DR. HARE: I move that we sustain the ruling of the Chair. The motion was seconded.

DR. ANDREWS: I do not want to throw any cold water upon this proposition because I am favorable to it, but it has been intimated here that this is not a vital question as to whether the report was submitted to the component societies or not, a mere technicality. I maintain, gentlemen, that it is not a mere technicality at all: it is extremely vital. If this resolution provided that this committee should submit their report, or the substance of their report, within six months, that the component societies might take this matter into consideration, it is not technical—it is vital. I do not want to see this House of Delegates go on record, if my assumption is true, that this is merely a technical mistake. It is not a technical mistake: it is a vital mistake.

THE PRESIDENT: Those in favor of sustaining the ruling of the Chair will signify it by saying aye; those opposed, the contrary. It is carried; the Chair is sustained.

If there is nothing further, a motion to adjourn would be in order.

Upon motion duly made and seconded the meeting adjourned.

JOINT SESSION OF THE SECTIONS ON MEDICINE AND SURGERY

In the afternoon, at the joint session of the Sections in Medicine and Surgery, President Workman introduced the newly elected President, Dr. Arthur J. Gillette, of St. Paul. Dr. Gillette said:

Members of the Minnesota State Medical Association, Ladies and Gentlemen: It is perfectly useless for me to attempt to express in fitting terms my appreciation for the distinguished honor you have conferred upon me. It is certainly a great honor to be chosen as President of the Minnesota State Medical Association, one of the grandest states in the Union. It is not only a grand and glorious state, one of which we are all proud, but I am sure you are all proud of it in a medical way. Possibly some of the young members here do not recall the fact that the State of Minnesota was the first state in the Union to pass a medical-practice act; and for this we have every reason to be proud. It reminds me of the older men who have gone and the older men who are still here with us today. It shows what kind of material the medical profession of the state started with. It is not a surprise that we have so many young and bright men in this state. They have had such wonderful examples.

We are proud of the fact that in our present trouble the State of Minnesota, particularly the members of the medical profession, have come to the front; and we are sending some of the very best of our medical men to help settle our national and international difficulties, and we are sure that everything will be done perfectly right and at the right time. I cannot let this opportunity go by without saying to the young medical men of Minnesota, who have so readily and so bravely offered their services to this country, that we are proud of them, and they are doing what their forefathers did in the war in this country. They fought and achieved an honor which they so justly deserved, for many of them fought in the Civil War, and rendered wonderful service. I hope you young men will know and appreciate that the medical profession appreciates you. We appreciate you to such an extent that we will certainly take care of your work while you are away, and I am sure it will all be given back to you if you come home alive.

I cannot take my seat without saying something to the older men who are going to look after the work of the younger practitioners. They are the grand old fellows, those who are too old to serve in the Army, and they certainly

will be glad to do all they possibly can for your patients, and in that way they are not replacing you, and you may rest assured that these old practitioners are going to look after your work so that you may serve your country, and they will be only too proud and too happy to turn over to you everything that you have so justly earned during your absence. (Applause.)

At the conclusion of Dr. Gillette's remarks, Dr. C. E. Riggs, Chairman of the Medical Section, introduced Dr. Archibald Church, of Chicago, who delivered an address on "The Social Value of Cranks."

Dr. A. A. Law, Chairman of the Section on Surgery, introduced Dr. Samuel J. Mixter, of Boston, President of the American Surgical Association, who delivered the Oration in Surgery. Dr. Mixter selected for his subject "Some of the Unsolved Problems in Surgery."

At the conclusion of these addresses, Dr. Charles H. Mayo moved that these two distinguished guests be made honorary members of the Association.

This motion was seconded by several members, and carried unanimously.

President Workman introduced Dr. Charles H. Mayo, who addressed the Association briefly on the medical aspects of the war, and what the medical profession is doing. Dr. Mayo said:

Mr. President and Members of the Association: The doctors of Minnesota have responded to the extent of 12.3 per cent of their number. There are about three or four states in the Union that run a little bit better, among them being Massachusetts, New York, and Pennsylvania; and Montana, for instance, has given 15 per cent of the members of the medical profession in that state. The doctors today have done their bit, and are doing it a little quicker than any other class in preparing for this great war.

We now have to turn our attention to special training for military surgery, and this is being arranged for as rapidly as possible in the forty-two military training-camps. Numerous large hospitals of 1,200 beds are being established outside in other places than these camps. We have now 800,000 men in training for the Army of the United States. We have 200,000 in training for the Navy. The next draft will take 500,000 more. It is difficult to arm these men, but for those who are abroad there will be plenty of guns, but at present for those at home there are hardly enough guns to make their training what it should be; but by the time they are ready to go abroad there will be enough guns ready for

them. It takes five tons of supplies for every man that goes abroad, taking everything into consideration. The country is cold for those who are not used to it. All of the tents must be doubled for the hospital divisions. It is necessary in all lines to work harmoniously. We have a great many thousand men over across the water who are now developing railroad systems. We have from 12,000 to 13,000 such men. There are several hundred men who are building nothing but telephone lines for the American division, and there are 10,000 engineers preparing the way for our Army.

It is necessary to have large buildings and hotels that are unoccupied which can be available for use as hospitals. It is necessary to consult railroad companies, and in the constructive work these buildings should be adequate and in the line of the running of these railroads so that the wounded can be brought back with great expedition. The Assistant Surgeon-General is on the ground in France preparing the way and working under the direction of Surgeon-General Gorgas. All the other assistants in this country who are working directly under Surgeon-General Gorgas are doing an enormous amount of work. In addition to 550 clerks who are employed in the Surgical Department, there are 200 medical men in uniform. The dentists have done remarkably well. Over 3,700 have applied for commissions, and nearly 3,500 commissions have been issued to them. Thirteen thousand doctors have received their commissions. Two thousand more have commissions, but have not signed for them, some of these doctors thinking it unnecessary. We have two thousand more acting in the Surgeon-General's office. An enormous amount of work is being done by the several departments. We need more doctors, and we shall get a great many men who have been holding off because of home conditions for fear that they would be compelled to go to some of these training-camps, and do the work of a soldier. These men do not realize the conditions of military life and the necessity for them to do what they have been trained to do. These men must have a knowledge of the affairs of military life, in order that everything may work smoothly and harmoniously. They must have the knowledge of how to give orders in proper form and how to deal with the dead soldier. Everything is military discipline, and this is very essential on the part of any man who goes into service.

In these forty-two training-camps there have been started already postgraduate medical schools of instruction in military surgery. The Government has been printing war manuals on all subjects, and getting them out as rapidly as possible. England has already her war manuals; France has hers; and we have a number of German physicians who have seen active service with the German Army who are anxious to help us out in the preparation of these manuals. These men have shown a great desire to help us out. We shall have manuals on surgical subjects, sanitation, hygiene, and many other subjects. We have already published a book under Colonel Lewis which deals with sanitation and hygiene. It has been compiled and rearranged from French, Italian, German, and English works. We have just completed a work on surgery of the brain and spinal cord which comprises about three hundred fifty pages. To show the efficiency of our Government work, 250 proof-readers were engaged to read the proof of this work, and it was all done in one day; and in three days the book went to the bindery. Many other things are being carried on at a very rapid rate, but we could or do not know about them. If these things were better known it would worry Germany a great deal more than she lets on. We know that Germany is greatly worried over the entrance of the United States into this war, and that we are in it to a finish. (Applause.)

I have been asked to say a word or two with reference to the mortality from injuries. In "over the top fighting" and in general fighting there are a great many injuries of the head, all sorts of fractures, brain injuries, and injuries to the eyes, jaws, face, scalp, etc. These injuries amount to 10 per cent. About 20 per cent of the injuries come from trench fighting because the head of the soldier is up, and about 50 per cent of the injuries are those of a general surgical character.

With the magnificent preparations that are being made it means that we are going to send to the front a healthy army under discipline, and under proper care and supervision. The actual mortality-rate will be but a trifle more than it would have been if the men stayed at home. One is greatly surprised at the small mortality accompanying this enormous world-wide war considering the millions of men involved. (Applause.)

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

NOVEMBER 15, 1917

A NEW MEDICAL JOURNAL AND THE JOURNAL SITUATION IN MINNESOTA

It has become apparent that only a few members of the Minnesota State Medical Association have understood, while a few have persistently misrepresented, the medical journal situation in the state; and therefore it is time to clear up the situation.

Some years ago the Association asked THE NORTH-WESTERN LANCET (now THE JOURNAL-LANCET) and the *St. Paul Medical Journal* for terms upon which one of them might be made the journal of the Association. The publisher (a layman) of THE LANCET offered the Association *absolute* charge and control, the same as of ownership, of the editorial and advertising pages of the paper, the business management to remain in the hands of the publisher. The *St. Paul Medical Journal*, published by the Ramsey County Medical Society, offered the Association editorial control of a *department* in its columns for the publication of its transactions and papers. The remuneration asked in each offer was \$1.00 per member for subscription.

THE LANCET'S offer was accepted, and a Publication Committee was appointed by the Association to conduct the journal. This committee met with the editor (Dr. W. A. Jones) and the publisher (Mr. Klein). The editor was continued in office, the advertising pages were purged of objectionable advertisements by unanimous agreement; and after the meeting, the editor and publisher dropped other advertisements which seemed to them objectionable even though they had been acceptable to the committee. The editor was instructed to pass temporarily upon new advertisements tendered, his decision being subject to revision by the Publication Committee.

At this time all medical journals were carrying many

objectionable and some fraudulent advertisements. About this time a new code of ethics was formulated by the Department on Pharmacy and Chemistry of the A. M. A.; and some of the advertisements already accepted by the Publication Committee of the Association fell under the ban of this new code, but the committee, although the subject was discussed, never saw fit to order the discontinuance of a single advertisement.

The contract with the Association was made for a short term, and has been renewed several times. At each renewal period the St. Paul journal sought to supplant THE LANCET, which was perfectly fair and its methods in the controversies were fair and unobjectionable until the annual meeting of 1916. At no time, until at the meeting last month, did the St. Paul journal offer the Association the same control over its editorial and advertising columns that THE LANCET named in its first offer, which has not since been changed.

At this point two things need to be made clear and emphasized. As is frequently done in working under a contract, important, if not vital, departures from the letter of the contract are made, and become both morally and legally binding upon the parties to the contract. Two such departures were made by the Association and THE LANCET from their contract, and they are reciprocally related:

1. The Publication Committee did not provide for the full editorial work of conducting THE LANCET,—that is, it did not appoint or provide for a managing editor to do the drudgery and the technical work of the editorial department, for which very few men are qualified. As this work had long been done, in part, by the publisher and, in part, paid for by him, a managing editor was not needed.

2. The Publication Committee has not ordered from the columns of THE LANCET any of the advertisements originally passed upon and accepted, some of which have become "unethical" under the new code; nor has it rejected a few like advertisements subsequently accepted by the editor under the power given him.

The additional income afforded by the liberal attitude of the Publication Committee, and the further income from another source, mentioned below, has enabled THE LANCET—

1. Largely to increase the amount of reading matter published.

2. To increase the number of illustrations used until they are now from five to twenty times the amount used in any other minor or State journal.

3. To use a high-grade enamel paper, which gives meaning and value to illustrations, especially to skiagraphs.

4. To have its manuscripts revised and its proof-reading done with a skill and care exercised by only three or four other medical journals in America. The character of this work has attracted so much attention that the preparation of manuscripts of books and society transactions offered our office has materially increased our income, which has been freely expended upon the paper.

The points of excellence above named made it possible for THE LANCET to increase its circulation outside of the societies it represents and outside the territory of such societies; and they brought to us the offer of

nearly twice as many manuscripts as we could accept, most of them by first-class men, inside and outside our territory, and also the offer of all the papers read at the meetings of several societies.

The amount of reading matter appearing in THE LANCET is easily overlooked because, the paper being published twice a month, a single issue may not be as large as a single issue of some of the monthly journals. The facts are as follows: For the past ten months (January to October, inclusive) THE LANCET contained 650 pages of reading matter, exclusive of the Publisher's Department, or an average of 65 pages a month. The approximate number of pages per month published by some of the State journals is as follows: Wisconsin, 40 pages; Northwest Medicine (representing three states), 32 pages; Georgia, 23 pages; Iowa, 36 pages; Kentucky, 48 pages; Michigan, 44 pages; Missouri, 45 pages; California, 44 pages; Ohio, 56 pages; New York, 50 pages; Pennsylvania, 60 pages. (The St. Paul Journal, 32 pages.)

The recently increased cost of publishing such a paper as THE LANCET imperatively demands either retrenchment or a large increase in its income from advertisers or subscribers. Retrenchment in the direction of its size or materially in its mechanical quality would mean injury of a permanent character to the journal, and loss of influence in the profession; and a material increase in advertising rates would be rank injustice while retaining the subscription price to members of the Association at \$1.00. Consequently the editor and the publisher decided a year ago that they would not ask this year for a renewal of the contract with the Minnesota Association, nor could they have accepted it if tendered on the old conditions with the prospect of having the paper's income so limited that a very greatly inferior journal would have to be issued.

THE LANCET is the pride of its editor, who does his work gratuitously, and of the publisher, who has given his almost entire time, in the capacity of managing editor to make the paper what it is.

THE ANNUAL MEETING OF 1916

With the above facts before us, we turn to the 1916 meeting of the Association, held in Minneapolis. At this meeting the *St. Paul Medical Journal* made a new offer, in substance, as follows: (1) to change its name to the *Minnesota Medical Journal*; (2) to send the paper to each member for \$1.00; (3) to publish the transactions and papers of the Association; (4) to permit each of the component societies of 100 or more members and two Twin City special societies, to elect an *associate* editor; and (5) to accept only advertisements approved by the A. M. A.

Privilege No. 4 was made, as the offer stated, "in order that this journal may truly represent the medical thought of the entire state."

Only two component societies, the Hennepin County and the St. Louis County, were thus offered *associate* editors, while the Ramsey County Society retained the editor.

And this is called truly representing the whole state!

The discussion on the subject at this meeting was led by Dr. E. W. Buckley, of St. Paul. His principal argument was for a larger journal to be published under the "control, auspices, and management of the State Association." He said the *St. Paul Medical Journal* and THE LANCET "are both small journals," and "we want a big representative journal."

Others spoke for a *better* journal; some spoke of the profits that would fall into the treasury of the Association, while there was some demand for an ethical journal.

Upon motion of Dr. J. C. Litzenberg, of Minneapolis, a committee of five was appointed to consider the whole matter, and to report at the 1917 meeting, its "report to be previously furnished to every component society for consideration and recommendation." The time for submitting the report to the component societies was placed at six months upon motion of Dr. R. E. Farr, of Minneapolis. These motions, we believe, were passed unanimously, the suggestion of referring the subject to a committee having been made by Mr. Klein, to whom the privileges of the floor had been extended.

The members of the committee were Drs. R. J. Hill and J. Warren Little, of Minneapolis; Drs. E. W. Buckley and G. E. Senkler, of St. Paul; and Dr. C. L. Scofield, of Benson. Dr. Buckley was the chairman.

THE 1917 MEETING

At the annual meeting, held in St. Paul, last month, the subject came before the House of Delegates with an attendance so small that Dr. Hill moved that the consideration of the subject be postponed to the next meeting of the House. The motion was defeated.

The majority report of the committee appointed by the 1916 House of Delegates, was made orally by Dr. Scofield, of Benson, on behalf of four members. The report was against the publication of a journal by the Association. The minority report was made in writing, and was signed by Dr. Buckley alone. This report appears on page — of this issue; but the questionnaire and the replies to the same, referred to in the report and said to be attached thereto, were not furnished THE LANCET for publication, nor was a report of the discussion furnished.

Comment on this proceeding is not necessary!

In the absence of a report of the discussion, we must depend upon our memory for its salient features, which were the control that ownership over the journal would give, and the profits that would accrue. The latter point was emphasized by the statement of the earning of the *St. Paul Medical Journal*, which it had made, according to Dr. Buckley, and not denied by members of its publication committee who were present, with a circulation of somewhat over *three hundred* copies. Of course, its large earnings were made prior to January 1, 1917, when it accepted all kinds of medical advertising. It purged itself on January 1, and at this meeting it was offered as a free gift to the Association.

The picture drawn of the new journal was indeed a rosy one; but not a word was said about its "size" or its "quality," nor was a word said about the size or quality of any other journal published by any other State Association with a membership of 1,500, the number used in the questionnaire; yet these were the points most emphasized at the 1916 meeting in favor of a State Association journal. It was simply understood that the new journal was to be "larger" and "better," and be a profit-maker.

After action favorable to the publication of a journal had been taken, it developed that no referendum vote of the component societies, as specifically required by the resolution of the 1916 House of Delegates, had been taken. For this failure, Dr. Buckley, the chairman of the committee, generously assumed the sole responsibility, but he minimized or wholly eliminated any pos-

sible objection to such action, as other speakers also did, by calling this requirement of the resolution a mere technicality (a "scrap of paper," as it were). But he did not stop there: he gave as his excuse for this breach of faith the fact that he was sick a part of January, and that it took a long time to get the information he sought from other associations. The 1916 committee was appointed in October, following the annual meeting; and, according to Dr. Buckley's own report, the first meeting of his committee was held on March 23, 1917, or *five months and ten days* after the annual meeting of the Association which passed the resolution giving the committee *six months* in which to make its report.

Comment is unnecessary!

We believe not over twenty votes were cast, or were necessary, to approve this radical action, which flouted the component societies, and set the bad precedent of disregarding a unanimous recommendation by an almost full House of Delegates the year before, and adopting the minority report made by one member of a committee of five, when he as chairman of such committee had disregarded the very essence of the committee's instructions.

THE VITAL OBJECTION TO A STATE JOURNAL IN MINNESOTA

The Twin Cities, with the really great Medical School of the University of Minnesota and the neighboring Mayo Clinic, now an integral part of that School, are the medical center of a wonderfully rich and rapidly growing territory, which has attracted, for a number of years, the most talented graduates from the best medical schools in America. This territory with wholly undivided medical interests comprises the states of Minnesota, North Dakota, South Dakota, Montana, and such parts of Wisconsin and Iowa as are contiguous to Minnesota. In this territory there are over six thousand physicians; and among them are men whose writings are welcome to the columns of every medical journal in America. The purely technical papers of these writers appear in specialized technical journals; but their general papers go to journals of general circulation. Both the *personal* and the *professional* interests, each a laudable interest, prompt them to publish their papers in a journal whose circulation is wholly within and represents a territory with common medical interests. In this, as in no other, way, the profession makes known its work and establishes its distinctive character; and the individual writer makes known his work, and receives proper credit for such work, and thus gains his proper rank in the profession. These ends can be accomplished solely through a first-class journal of the above character.

If the only state association in such a field, with a membership barely large enough to support a small journal, withdraws from this large, homogeneous body of physicians, and publishes a journal of its own under its own name, it arouses those jealousies that are latent in all professions, and it dissipates the common interests of the profession which make for progress. And in doing this, it injures both the profession and the public. These inevitable results are further magnified when such a movement is tinged with the personal interests of a few men or of a single locality.

This is exactly what the Minnesota Association has decided to do.

If the above conclusion can be gainsaid, its premises must be destroyed. We ask the fair-minded and level-headed men of the Minnesota Association, can this be done?

If the Association's new journal fulfills all the glowing predictions made for it, its success will simply increase the evil effect of disintegrating the best field in America for a splendid journal made possible by large community interests.

It is easy to anticipate the answer that will follow even partial failure of the Association's journal, a failure that is made inevitable alone by the war prices that now prevail, and this answer will be that "It is better for the Association to fail than to put its stamp of approval upon 'unethical' advertising." But how beautiful and how consistent this would sound, and would be, if the Association asserted, "We will not put our stamp of approval upon a man by giving him membership in the Association, if he *prescribes* 'unethical' preparations."

If one of the assumed positions is right, the other is right; and to think and to do right constitute the sole test of manhood. Let us ask ourselves if we are manly men in the Minnesota Association? The public will test any standard we set up for ourselves, and the test, in the parlance of the street, will be an *acid* test.

If we want a *larger* and a *better* journal than we have had up to the present, let us pay the cost of making it, either by accepting advertising upon the approval of a competent Publication Committee, or by a large increase in the subscription price.

Until the Minnesota Association is willing to do one or the other, and to help to make THE JOURNAL-LANCET, as it has been, the journal of the whole profession in this territory, THE JOURNAL-LANCET knows no terms upon which its long-time relations can be resumed, for inevitable financial loss stands squarely in the way.

Pledges of loyalty to THE JOURNAL-LANCET have been received from some men who have read it for two or more decades, and from other men who have read it only a year or so, and these pledges have been so abundant and so substantial that its future success in this splendid field is assured. We shall do all in our power for the success of the profession—for the men who are doing their work in organized societies and for the men, the number of whom, in our opinion, is only too large, who are not in any medical societies.

LOCATION WANTED

In North Dakota or Minnesota. Must have good schools. Practice should average \$4,000 to \$5,000 collectible. Address 602, care of this office.

LOCUM TENENS WANTED

A number of physicians are desirous of obtaining places as assistants or locum tenens for periods of one to three months. Address 603, care of this office.

LOCUM TENENS WANTED

A \$5,000 unopposed practice in town of 400 in Minnesota. Electric light and waterworks. Am commissioned in the army. Can have what you make. Nothing to buy. Must sign contract to leave upon my discharge. Address 590, care of this office.

LOCUM TENENS WANTED

A young doctor to take my practice for four weeks in a country town about 40 miles from the Twin Cities. Scandinavian or German preferred. Address 594, care of this office.

OFFICE POSITIONS WANTED

Several young women without experience in that line of work desire positions in physicians' offices. One of the applicants can speak French and German. Address 598, care of this office.

PHYSICIAN WANTED AT ONCE

In a good county seat town of 800 in North Dakota. Only doctor in town. For period of war, or will sell practice. Have joined the Medical Reserve. Address 591, care of this office.

NURSE WANTS OFFICE POSITION

A registered nurse with five years' experience and excellent references, wishes a position as assistant in a doctor's office. Enquire of Della G. Drips, 703 Delaware St. S. E. Phone, East 5169.

DRUG STORE FOR SALE

The only drug store in town of about 400; well settled farming country, in southeastern South Dakota. Good opening for a doctor with \$4,000 cash. No doctor in town. Address 586, care of this office.

SCHEIDEL INDUCTION COIL FOR SALE AT BARGAIN

Electrolytic and mercury interrupters, 3 meters; 4XR tubes; compressor apparatus; Leucodescent lamp; wall plate; high-frequency apparatus; large number of H. F. tubes; office scales; hand centrifuge. Owner retiring from business. Address 596, care of this office.

POSITION WANTED

Am 31 years old, have had two years' hospital and four years' general practice. Am married and have one child. Position desired with surgeon or busy practitioner. Will consider locum tenens. Registered in Minnesota and Wisconsin. Address 587, care of this office.

PRACTICE OFFERED

I will give free a \$4,000 practice in town of 400, in southeast South Dakota to physician who buys my office equipment, amounting to about \$300. Mixed population. Thrifty farmers in a good country. Money from the start. No deadbeats. Must leave by November 1st. Address 592, care of this office.

PHYSICIAN WANTED

Assistant or partner in a well-established practice in one of the best towns in Northeastern South Dakota. County-seat; population, 1,700. Good schools, churches, electric lights, city water, etc. First-class, thickly settled American, Norwegian and German farming territory. Fine opening. Address 600, care of this office.

PRACTICE OFFERED

In modern town of 450. Southern Minnesota, free for rental of large office room, ground floor, furnace heated. Rental of house optional. Good equipment, including x-ray, offered without charge for use to responsible party. Unopposed practice running over \$5,000 in rich territory. Nothing to buy. Reason, Military Service. Address 601, care of this office.

OFFICE POSITION WANTED

Two positions wanted in doctors' offices. One stenographer with several years' experience and one experienced in general office work, some experience in typing and bookkeeping. Address 604, care of this office.

PRACTICE FOR SALE

An unopposed practice in village of 400 in western Minnesota for sale to purchaser of office equipment, \$350. Practice has averaged \$4,000 for many years without surgery. Collections, 95 per cent. Health reason for leaving. Address 585, care of this office.

OFFICE FOR RENT

Over ten per cent of the physicians of Minneapolis have been called to war. This has left many vacant offices, many of them in central locations, making an opportunity for physicians and dentists in outside locations to come to the center. The Pillsbury building, Sixth and Nicollet, is in the heart of Minneapolis, and offers some excellent space in single, double, or en suite.

PRACTICE FOR SALE

A practice paying over \$4,500; in a North Dakota town of 500 population, 99 per cent Scandinavians; railroad division point; railroad appointment with pass; good roads, and very large territory; free office over drug store; opposition very light. Practice goes with a very good home for \$2,800—\$1,000 down, balance on suitable terms. Going to specialize. Act at once as this notice may not appear again. Address 597, care of this office.

PRACTICE FOR SALE

Unopposed \$4,500 (or better) practice in thriving town of 500; located in richest county of state; large territory (14, 16, 18 miles); good roads; collections, 98 per cent; railroad division; railroad appointment with pass; insurance appointments transferable; free office rent. Will sell for price of residence, \$2,800; \$1,000 down, balance on suitable terms. Reason for selling, specializing. Answer quickly. Address 593, care of this office.

LOCATION OR PARTNERSHIP WANTED

Having been released from the M. O. R. C. because of an attack of acute articular rheumatism I am now looking for a location or partnership. I am an American, 39 years of age, married, one child. Have been a successful general surgeon. Am also a laboratory man. Own complete equipment, including x-ray outfit. Am an Episcopalian, Mason, and Odd Fellow. Desire a town of 2,000 to 10,000. Registered in Minnesota and North Dakota. Address 589, care of this office.

NEW ORLEANS POLYCLINIC

The Graduate School of Medicine of the Tulane University of Louisiana, thirty-first annual session, opened Sept. 24, 1917, and closes June 8, 1918. Physicians will find the Polyclinic an excellent means for posting themselves upon modern progress in all branches of medicine and surgery, including laboratory and cadaveric work. Special attention given to military matters this session. For further information address Charles Chassignac, M. D., Dean, New Orleans Polyclinic, post-office drawer 770, New Orleans. Tulane also offers highest class education leading to degrees in medicine, pharmacy, dentistry, hygiene and tropical medicine.

DEATHS REPORTED TO THE STATE BOARD OF HEALTH OF
MINNESOTA FOR THE MONTH OF AUGUST 1917

REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

CITIES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polio-myelitis	Epidemic Cerebro- spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Fuerperal Septicemia	Accidental Deaths
Ada	1,253	1,432	0															
Albert Lea	4,500	6,192	6			1												1
Alexandria	2,681	3,001	4															
Anoka	2,769	3,972	1															
Austin	5,474	6,960	9															
Barnesville	1,326	1,352	1															
Hemidji	2,183	5,099	5	1		1												
Benson	1,525	1,677	1															
Blue Earth	2,900	2,319	0															
Brainerd	7,524	8,526	11			2									1	2		1
Breckenridge	1,282	1,840	3															
Canby	1,100	1,528	2															
Cannon Falls	1,239	1,385	1															
Chaska	2,165	2,050	2															
Chatfield	1,426	1,226	2															
Cloquet	3,074	7,031	3				1											
Crookston	5,359	7,559	7		1													
Dawson	962	1,318	2															
Detroit	2,060	2,807	2															
Duluth	52,968	78,466	59	1	4	2	2	1					1		6	2	1	4
East Grand Forks	2,077	2,533	0															
Ely	2,572	3,572	4															
Eveleth	2,752	7,036	3	1														
Fairmont	2,440	2,953	4															
Faribault	7,868	9,001	4															
Fergus Falls	6,072	6,887	3															
Glencoe	1,788	1,788	1															
Glenwood	1,116	2,161	2															
Granite Falls	1,454	1,454	0															
Hastings	3,811	3,983	3															
Hutchinson	2,495	2,363	0															
International Falls		1,487	1															1
Jordan	1,270	1,151	1															
Lake City	3,142	3,142	3															
Le Sueur	1,937	1,755	1													1		
Little Falls	5,774	6,078	7															
Luverne	2,223	2,540	1															
Madison	1,336	1,811	1															
Mankato	10,559	10,365	12														2	1
Marshall	2,088	2,152	3															
Melrose	2,591	2,591	0															
Minnneapolis	202,718	301,408	323	32	6	12	9				1		3	3	18	36		22
Montevideo	2,146	3,056	3															
Montgomery	979	1,267	2															
Moorhead	3,730	4,840	3	1	1													
Morris	1,934	1,685	3	1														
New Prague	1,228	1,554	2															
New Ulm	5,403	5,648	11	1														2
Northfield	3,210	3,215	1															
Ortonville	1,247	1,774	7													3		2
Owatonna	5,561	5,658	8			1												1
Pipestone	2,536	2,475	1															
Red Lake Falls	1,666	1,666	2															
Red Wing	7,525	9,048	11	1														
Redwood Falls	1,661	1,666	4	1														
Renville	1,075	1,182	0															
Rochester	6,843	7,844	40	1	1											10		1
Rushford	1,100	1,011	1															
St. Charles	1,304	1,159	0															
St. Cloud	8,663	10,600	12	2	1													2
St. James	2,102	2,102	1															
St. Paul	163,632	214,744	166	10	5	2	2						1		13	24	1	17
St. Peter	4,302	4,176	3	1	1													
Sauk Centre	2,154	2,154	3															
Shakopee	2,046	2,302	3															
Sleepy Eye	2,046	2,247	1															
South St. Paul	2,322	4,510	8	2									1					2
Staples	1,504	2,558	2															1
Stillwater	12,318	10,198	6															
Thief River Falls	1,819	3,174	4	1														
Tower	1,111	1,111	0															
Tracy	1,911	1,826	0															
Two Harbors	3,278	4,990	3	1	1													
Virginia	2,962	10,473	14															4
Wabasha	2,622	2,622	6	1			1										2	
Warren	1,276	1,613	4	1														1
Waseca	3,103	3,054	4															
Waterville	1,260	1,273	0															
West St. Paul	1,830	2,660	1															
Willmar	3,409	4,135	4															2
Winona	19,714	18,583	20	1		1												
Winthrop	813	1,043	1															
Worthington	2,386	2,385	1															

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Aitkin	1,719	1,638	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Akeley	...	...	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Appleton	1,184	1,221	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Belle Plaine	1,121	1,204	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Biwabik	...	1,690	3	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...
Bovey	...	1,377	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Browns Valley	721	1,058	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Buffalo	1,040	1,227	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Caledonia	1,175	1,372	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cass Lake	546	2,011	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Chisholm	...	7,684	3	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
Coleraine	...	1,613	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Delano	967	1,031	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Farmington	733	1,024	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fosston	864	1,055	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Frazee	1,000	1,645	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Grand Rapids	1,428	2,239	5	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Hibbing	2,481	8,832	12	...	...	...	...	...	...	...	...	...	...	...	5	...	...	2
Jackson	1,756	1,907	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Janesville	1,254	1,172	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kenyon	1,202	1,237	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lake Crystal	1,215	1,038	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Litchfield	2,280	2,333	6	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...
Long Prairie	1,385	1,250	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madelia	1,272	1,273	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Milaca	1,204	1,102	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mountain Lake	959	1,081	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nashwauk	...	2,080	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
North Mankato	939	1,279	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
North St. Paul	1,110	1,404	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Osakis	917	1,013	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Park Rapids	1,313	1,850	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pelican Rapids	1,033	1,019	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Perham	1,182	1,376	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pine City	993	1,258	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plainview	1,038	1,175	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Preston	1,278	1,193	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Princeton	1,319	1,555	6	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...
St. Louis Park	1,325	1,743	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sandstone	1,189	1,818	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sauk Rapids	1,391	1,745	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
South Stillwater	1,422	1,343	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Springfield	1,511	1,482	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Spring Valley	1,770	1,817	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Wadena	1,520	1,820	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wells	2,017	1,755	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
West Minneapolis	2,250	3,022	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Wheaton	1,132	1,300	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
White Bear Lake	1,288	1,505	4	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Windom	1,944	1,749	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Winnebago City	1,816	2,555	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Zumbrota	1,119	1,138	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

STATE INSTITUTIONS

Anoka, Asylum	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Faribault, School for Blind	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Faribault, School for Deaf	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Faribault, School for Feeble Minded	6	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fergus Falls, Hospital for Insane	11	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hastings, Asylum	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Minneapolis, Soldiers' Home	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Owatonna, School for Dependents	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Red Wing, State Training School	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rochester, Hospital for Insane	13	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Sauk Centre, Home School for Girls	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Peter, Hospital for Insane	8	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Cloud, State Reformatory	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Stillwater, State Prison	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

OTHER PARTS OF STATE

OTHER PARTS OF STATE	563	60	16	9	9	2	...	...	...	1	1	1	30	53	2	53
Total for state.....	1559	132	39	32	25	4	...	...	2	1	7	8	86	145	6	136

*No report received. REGISTRAR not doing his duty.

126 stillbirths not included in above totals.

Quaker Oats

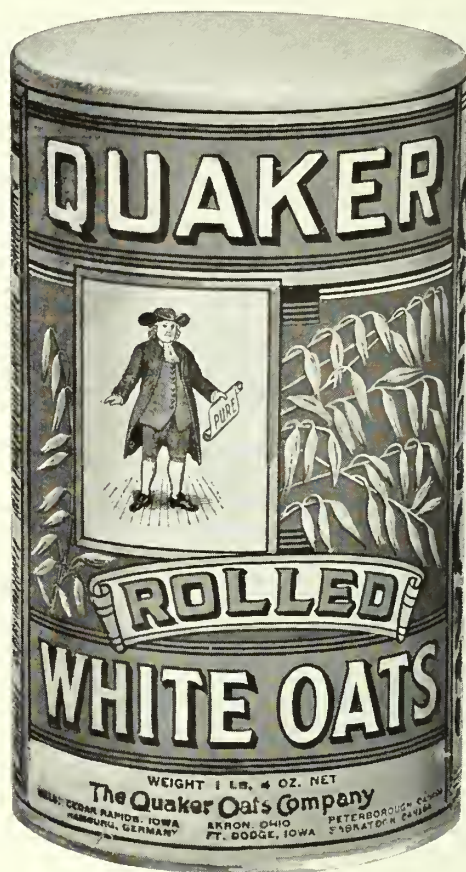
Extra Grade Oat Flakes

**Five Cents
Per 1000 Calories**

The same food value in eggs costs 44.7 cents. In round steak, 45.6 cents. In milk, 18.5 cents. In white bread, 8.5 cents.

Every dollar spent for Quaker Oats saves \$3 or \$4 as compared with the average mixed diet.

Yet Quaker Oats is queen oats flaked. We use just the big plump grains. A bushel of choice oats yields but ten pounds of Quaker.



The result is a flavor which has won the world.

Quaker Oats is the leading brand wherever oat lovers live. It fosters the love of oats.

The Quaker Oats Company

Chicago

PUBLISHER'S DEPARTMENT

STILL ROCK SPA

Still Rock Spa is a high-grade 100-room hospital for the exclusive treatment of diabetes and Bright's disease, and is located at Waukesha, Wis.

This institution is conducted by highly competent men. Dr. A. J. Hodgson is the physician-in-chief, and Dr. H. P. Greeley is his associate.

As institutional treatment is now recognized to be of the utmost importance in the handling of these diseases, Still Rock Spa is well worth considering by physicians seeking such care for their patients.

A GOOD INTESTINAL ELIMINANT

In those cases of dyspepsia and gastric indigestion based on constipation, the use of a good intestinal eliminant will often give relief.

An over-filled colon frequently gives rise to anorexia and to distress and formulation in the stomach after meals.

A wineglassful of Pluto water taken in a tumblerful of hot water half an hour before breakfast is an efficient remedy and worthy of trial.

The French Lick Springs Hotel Company will cheerfully furnish samples—diet lists if you desire—for use in your practice, and believe your experience with Pluto water will justify its continued use.

THE WAUKESHA SPRINGS SANITARIUM

A sanitarium for the treatment of patients suffering from nervous diseases, if under the management of a thoroughly competent man, should become in these nervous times the resort for patients threatened with nervous breakdown as well as for those who have suffered the breakdown. Thus to care for the former class means even more than the preventive medicine that wards off the ordinary infectious diseases. The physician who thus saves the head of a family is doing a work of inestimable value.

Dr. Byron M. Capales conducts such an institution and does such work in his admirably equipped sanitarium at Waukesha, Wis.

A SOUTH DAKOTA SANITARIUM AND HOSPITAL

Chamberlain, S. D., has a modern 125-bed institution, bearing the city's name (The Chamberlain), which is now in thoroughly competent and scrupulous hands. Dr. R. A. Crawford, the superintendent, is working with, not antagonistic to, the medical men of this section; and he invites the co-operation of all such men, whether they send him patients or not.

Such an institution is a great benefit to both the city and the state in which it is located, and the physicians of the territory which it serves should feel a personal interest in its work and its success.

THE WINKLEY ARTIFICIAL LIMB

The enormous demands for artificial limbs, now made, and sure to continue for many years, will inevitably tend to lower the quality of the product of many manufacturers thus compelled to speed up. To the physician who wants for his patients the same quality of limb that was obtainable five, or ten, or thirty years ago, we can confidently commend the "Winkley" limb, which is still made under the supervision of the man who developed it, beginning 30 years ago—the Honorable Low-

ell E. Jepson, together with his brothers, Mr. J. H. Jepson and Mr. F. N. Jepson, of Minneapolis.

The Winkley limb is as near perfection as such a device can well be brought. It is made on scientific surgical principles, of the best of material, and by workmen who have been at this work continuously almost during the life of the Winkley corporation, over thirty years.

It is worth while to recognize merit, both in the article one wants to buy, and in the men who make it. "Winkley" on a limb signifies that it is "18 carats" fine.

DRUG ADDICTIONS AND ALCOHOLISM

If the prohibition now in effect in many states reduces the number of cases of alcoholism in America, all will rejoice, and if it does not drive a great many alcoholics, mild and acute, to drug addiction many observers will be surprised. Whatever the results of this form of legal restraint, we have both classes of men with us in vast numbers, and physicians must treat them or provide treatment for them by experts in suitably equipped institutions.

One of the few such institutions is now, and long has been, conducted by Dr. William K. McLaughlin at 4733 Vincennes Ave., Chicago, and is called the Hygeia Hospital. Its management long ago gained for Dr. McLaughlin the confidence of the medical profession.

MEYER NO. 2 INTERRUPTLESS APPARATUS

The Wm. Meyer Company, of Chicago, manufacturers of high-grade electrical appliances, claim that they have an unexcelled piece of mechanism in their No. 2 Interruptless apparatus, which sells for \$560.

It has a seven-inch spark gap, does faultless radiographic work when timed by the Brady exposure table, and gives greater power than any other machine of equal spark gap. Many offices in the Northwest are equipped with this piece of apparatus, and in no instance has it failed to give perfect satisfaction.

The company is represented in Minneapolis by the Standard Medical Supply Company, who will give full information upon any point in this line, and will instruct users of this apparatus until they become perfect masters of it, which takes only a short time, as it does its work almost automatically, and does not easily get out of order.

CATGUT LIGATURES—NOTHING BUT THE BEST

To use any ligature for surgical work than the *best* may endanger the life of the patient and the reputation of the surgeon. If it is an animal ligature it is called "catgut," but, nevertheless, it is made from the intestines of the sheep. Manifestly, to get the best, we go to the source of supply; and the headquarters of the dead sheep is at the Armour packing plants, where the highest sanitary conditions prevail.

The next step is the skill of the men who direct the work, the perfection of the plant, and, not by any means the least important, the responsibility of the manufacturers.

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THE GRADWOHL BIOLOGICAL LABORATORIES

The Gradwohl Biological Laboratories, whose advertisement appears elsewhere in this issue, are very well known throughout the United States for the excellence of their work. The Director of these Laboratories, Dr. R. B. H. Gradwohl, of St. Louis, Mo., needs no introduction to the physicians of the Northwest, where he has many friends and clients. These Laboratories not only turn out work for their professional clients, but a large portion of the time of the workers is spent upon research work, which is applicable to the many practical problems of everyday medical practice. A number of important original communications have come from these Laboratories, the most notable of which was the working out of the so-called Hecht-Gradwohl test for syphilis, which, in the hands of many laboratory men, has proven to be about 20 per cent more definite than the classical Wassermann. These Laboratories do the Wassermann and Hecht-Gradwohl on every blood submitted. In addition to this, many problems of the new blood-chemistry have been worked out in the Laboratories, the Director being the author of the latest textbook on this subject, namely, *The New Blood & Urine Chemistry*, published by C. V. Mosby & Co., of St. Louis.

Physicians who patronize these Laboratories will have no cause for complaint. The work is excellent, and reports are promptly made by mail, or wire upon request. The Laboratories are open every day in the week so that there is no delay in turning out reports. The fee list, which will be sent to any physician, is extremely moderate, and is based upon overhead expense plus a legitimate margin of profit sufficient to carry on the work of the institution. These Laboratories will send

free on request not only containers, slides, and culture tubes, but also a new and interesting book, "Chemico Biological Diagnostics," covering the interpretation of laboratory tests.

These Laboratories operate also the Pasteur Institute of St. Louis under License No. 50, granted by the U. S. Treasury Department. The older cord method has been discarded, and the Pasteur Institute of St. Louis furnishes a glycerinized brain emulsion by the dilution method which is a very efficient and safe way of making the antirabic virus. This is a mail course of treatment, and has been in use for many years with great success.

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The fulfillment of the letter of an obligation is a good thing, but the observance of the spirit of a patriotic duty and privileges is a far better thing. The American Government asks every American family to observe one wheatless day in each week, and we all know why. The letter of the request is to cut down the consumption of wheat in one's family by one-seventh; but the spirit of it, because of the great need of our own sons and of our European allies, is to cut down the use of wheat until their utmost need is met.

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DELIA O'CONNELL, R. N., SUPERINTENDENT

THE JOURNAL- LANCET

The Journal of the Minnesota State Medical Association
and Official Organ of the
North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, DECEMBER 1, 1917

No. 23

PRESIDENT'S ADDRESS*

BY HARPER M. WORKMAN, M. D.

TRACY, MINNESOTA

Friends and Members of the Association: I am unable to express my appreciation of the honor conferred on me a year ago, when the House of Delegates made me your President. I know the office was given me as a compliment to my long years of membership and for service in the Council since the reorganization, and not for any contributions I may have made in the scientific sections.

At this time I desire to acknowledge my indebtedness to the officers and members of the various committees for their assistance and support, because to their efforts, more than to mine, will be due the success of this meeting.

As we approach the fiftieth anniversary of the organization of this association, I am reminded of a conversation, held a few months before his death, with that fluent writer and lover of medical history, the lamented Burnside Foster. He then stated that it was his opinion that the pioneer physicians of Minnesota were superior to those of any other state with which he was acquainted, nor had so many of any other state been subjected to the dangers of the frontier as were those of Minnesota; and he hoped some one would feel it his duty to write a history of the early practitioners while the data are still available. He spoke particularly of Drs. Murphy, Hill, Borup, the massacred Humphries, and Wieser, who gave his life in the Sioux war.

While I have had the honor of knowing all but four of the former presidents, many of the founders of this association, and a number of the earliest physicians, and to know something of their trials and history, it is not within the ability of my pen to pay proper homage to those men; but it is fitting that I should refer to some of those with whom I was intimately acquainted, and who resided near or at New Ulm prior to August, 1862.

The financial return did not enter into the consideration of physicians in those days as it does now, when, often on horseback or snowshoes, carrying their armamentarium in saddlebags or on their backs, sleeping in the open or in the tepee of some Indian whose language they spoke, whether Sioux, Chippewa, or Winnebago, they made their calls, paying no heed to their own comforts, thinking with pride of the good they were doing, and, I will add, the only division of the fee they ever thought or heard of making was that of giving it all to the patient.

Of those early men who were then, as they would be today, medical giants, located on the border, with no civilization beyond them, there were the intrepid Mayo and the aggressive Ayers, of Le Sueur; the fearless Daniels, of St. Peter; the accomplished surgeon at Fort Ridgely, Muller; old Dr. McMahon, of Mankato; Weschkie, of New Ulm; Wellcome, of Garden City; and the unassuming Thompsonian Humphries, of Leavenworth,—all survivors of the Sioux war, knowing but one flag.

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

"Champion of truth and right,
Determined, honest, level-headed, just,
Who broke no promise nor betrayed no trust."

Thinking ever of their duty to their country and to their profession, they aided both professionally and physically in saving the inhabitants of the section of this state where they resided from the Sioux Indians. There, a few weeks ago at New Ulm, some of the survivors of that massacre, forgetful of the obligations they owed the Government that saved and protected them, met and publicly applauded the speeches of those who were attempting to stay the arm that had saved them when proposing to do as much for the peoples of many nations. While the loyal inhabitants of that city were slow to realize the seditious nature of that meeting, their resentment is great.

It is to be regretted that the leader of that band of traitors is an honored member of this body and a personal friend of many years, but I should be derelict in my duty if I failed to call attention to such acts.

Notwithstanding that there have been a few traitors in the profession in this state who have condemned the President and have cried aloud "War is cruel: it shall not be; we want peace," the profession of this state has responded splendidly, giving about 12 per cent of its number, but we are still short in our quota. I voice the wish of the State Committee of Medical Preparedness when I urge physicians under fifty-five years of age who are physically, as well as professionally, qualified, to heed the call to duty and to volunteer to go and care for the troops now being called to the colors. Surgeon General Gorgas and the National Committee on Medical Defense ask for doctors; the soldiers need them more than the people at home. There can be no question but that an additional 10 to 15 per cent of the very best men of the profession of this state can be spared. Prick yourselves and see if your blood is American red. For God's sake do not make the bluff of displaying your patriotism in your button hole before it shows in your veins. To be sure a few doctors have grown suddenly solicitous regarding the welfare of their patients. Though there is not a wife, father, mother, or sweetheart but who is willing to take his or her chances, in order that those who go into the trenches may have the best medical service.

Today we shall be reminded that many of our number have laid aside the habiliments of peace, and put on those of war, and we shall miss many familiar faces and voices so often raised in our

discussions. We trust that all who leave the state, full of hope, honor, and professional pride, will return to put to shame those who, through a streak of yellow, fail to offer their services to protect their wives and children from the indignities and suffering which Colonel Goodwin so graphically described in his address in Minneapolis last spring when speaking of the women and children of Belgium. Those who heard that address, I am sure, will agree with me when I say that the women of this country were in like danger; and the men who are now seeking an excuse for staying at home would not fight to save the chastity of their own wives and daughters. Now is the time to enter the service. Everywhere, as you know, county societies have adopted resolutions pledging their members to care for the practices of those physicians who go, and to give them a liberal percentage of all fees collected from their patients. Thus those remaining at home will be doing "their bit."

Many of the old men in the profession who have given up or were about to give up practice, again find themselves taking up its burdens, forsaking the ease and comforts they had hoped to enjoy during their remaining years, thus releasing the younger men for service.

Your boys and mine have gone into this war, and the moments of parting when we stood beside the khaki-clad forms of those we love, we recall, not as the happiest, but as the proudest of our lives.

No men have made greater sacrifices or shown greater loyalty than have the women of the Red Cross, who are giving money and are working continuously in order that the troops may have comforts, and the ambulances and hospitals may be perfectly equipped, and the women who, when placing on the nation's altar as a possible sacrifice a husband, or a son that they have borne, have said: "God spare you; it is your privilege to be a soldier, but mine to give is a greater right."

Of all the professions, the members of the one closest allied to the practice of medicine, the graduate nurses, have shown the greatest devotion to duty. They have volunteered in a greater percentage than have physicians, claiming no exemptions and asking no favors, nor have they looked for, or tried to hide behind, a pair of trousers, but rather have they asked that they might be sent where they were most needed and without regard to personal risk.

Never in the history of war has medicine and surgery been placed on so high a plane; and, with the wonderfully perfect organization and

equipped hospitals, such as the Minnesota Base Hospital, the possibilities of American medicine cannot be anticipated.

Of matters of direct interest to this Association, the per-diem hospital on the University Campus met with so intense and so nearly universal opposition from the members of the profession outside of those who were to benefit by it, that, I trust, it "died a bornin." The promoters of that plan must have realized it was a mistake, for they know that—

"He who has a thousand friends

Has never one to spare;

And he who has one enemy

Will meet him everywhere."

The increase in Medical School salaries has done away with the claimed necessity for a per-diem hospital and has settled what promised to be a very bitter controversy. Though the question of additional clinical facilities is yet to be decided, all must concede that they are needed; and whatever plan is proposed, so long as it is limited to indigent patients, should receive the enthusiastic support of our entire membership.

The President and the Dean of the Medical School will surely welcome the support of the men in the profession who aided former Deans Millard, Ritchie, and that tactful organizer, Westbrook, who did so much for the Medical School under the guidance of the beloved and respected President Emeritus Northrop, whose mind was great enough to grasp the possibilities of medicine in Minnesota backed by a united profession.

This Association has not changed its attitude

in the slightest, and still wants the standards of medicine advanced; and it is as willing as ever to lend its aid. So if the Faculty will make as great an effort to restore the good feeling which existed prior to the re-organization of the Faculty as has been put forth by a few of its members to increase the dissatisfaction which exists throughout the state, there will be a united profession in Minnesota, working for the School, instead of against it. If all factions strive to maintain harmony we shall soon have the best medical school in the world.

In closing, I desire to refer to the Mayo Foundation: I am pleased to inform you that it is no longer a source of dissension. The new plan has been adopted by the Board of Regents, discussed in the daily press, and our own JOURNAL has referred to it in complimentary terms; but up to this time a full text of the contract has not been published, to my knowledge, which may be only an oversight. It is evident that the Doctors Mayo desire to have harmony restored; and the change in plan was undoubtedly made with that hope. As the opponents carried their point, it should be satisfactory to all, and the ill feeling, caused by the contention should be forgotten. It is now an unqualified gift to the Medical Department of the University, and is intended to benefit that institution alone; and thus the founders are likened unto the householder, who, when his laborers demurred at their wages, asked: "Is it not lawful for me to do what I will with mine own?" and there can be no reason to open the question again.

ORATION IN SURGERY: SOME OF THE UNSETTLED PROBLEMS IN SURGERY*

BY SAMUEL J. MIXTER, M. D.

BOSTON, MASSACHUSETTS

Members of the Minnesota State Medical Association: It is, indeed, an honor to be asked to address the medical men of this state,—a state that has already given over eleven per cent of its medical population to the service of the country, and is ready to give more when necessary (I would that we of other states could say as much); a state that was the first to denounce, through its Committee of Public Safety, treasonable utterances in high places and to call for the

suppression of the offender; a state that is such an important factor in supplying the nation and her allies with, not only food and iron, but brains and enthusiasm. This is no time for "slackers," either in our profession or in any other. In the old days the parson and the doctor were the two important factors for good in their community, and today, though the mental and physical horizon of men and nations has broadened, their influence in the turning of the energies of man toward right or wrong is still powerful, and we must see to it that we keep step together in the

*Oration in Surgery, presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

right direction. Whoever is guilty of anything approaching quackery or cowardice lowers the standard, and disgraces the profession.

Strenuous and possibly evil days are ahead of us, days of hardship and sorrow, days of disaster and need, before we see the dawn of the day that brings us victory; but let us not disgrace ourselves, led by the teachings of a false philosophy, as some of our former brethren have done, and so be parties to foul deeds, prostituting our scientific attainments to a hellish "Kultur," spreading the germs of disease and death to men and animals, murdering indiscriminately the strong and the weak, the child and its mother, as well as the fighting man. We are face to face with a foe that recognizes no rules of civilized warfare, no laws of God or man; let us win the fight without descending to his base level, let us respect the woman and her child, the cross of red on its field of white, and the sanctity of motherhood. Let our land be repleted, and our losses of men made good, by a new army of legitimate children, not by the product of a legalized promiscuous utilitarian procreation. Dishonor is worse than death, and victory may be more damning than defeat.

The medical profession has a mighty task before it; and by its skill, example, and precept it must help to hold up the hands of all true men, so that, when we have passed through the clouds of war, we may greet the sun of peace, a wholesome, upstanding nation whose record is clean.

The war and his individual duty, under his present circumstances, are in the thoughts of every earnest man today and are fit topics for discussion wherever men meet together for mutual advancement and companionship.

The war must and will be won, whether sooner or later. The country is at last aroused, and order is taking the place of chaos, action of inactivity, and if everyone does his part, farmer and mechanic, professional man and laborer, the time of doubt and suffering will be greatly shortened, and the end assured; anything approaching treason or disloyalty, either by the individual or by organized bodies of men, under whatever name, must be suppressed by the strong hand of the law, backed by public opinion.

Up to this point, I have spoken of things that we all know are true, are axiomatic—now I wish to speak of a few of the problems, the subjects under investigation that interest the surgeon of today.

Fortunately, there are plenty of these always

with us, else our work would be a dull, weary, mechanical round, and we might as well peg shoes. What is considered truth today is known as error tomorrow, and the only hope for us and for mankind is in a general advance in our knowledge and our technic. Some men are so constituted that they are willing to accept as facts things that are only theories, while others who consider themselves conservative are unable to advance either on their own initiative or by following the teachings of master minds. To the latter class there are few unsolved problems in life; and they jog along supremely content with themselves and the world in general. There are few men of this class in our profession, thank Heaven. Meetings such as this are a great factor in keeping men alert and progressive. Mutual contact rounds off the rough corners of our minds; frank and free discussion clears up unsettled points, and there is a chance to size up the men we meet.

What operation has seemed to us so simple, so absolutely a matter of settled rules, as an amputation? And yet, within a few years, it has been shown that the old method of leaving a periosteal flap was not only open to question, but probably just the wrong thing to do. I hear from surgeons in France, where today there are, unfortunately, many opportunities for study and observation, that the results obtained by newer methods have been a great improvement over the old. When the surgical history of this war is written we shall find that the treatment of wounds in civil, as well as in military, life has undergone a tremendous change. Years ago I was at a surgical meeting in London where Lister and others spoke, and it was stated that before the introduction of the Lister method in a certain large city of India every patient with a compound fracture of the leg died, whether amputation was immediately performed or not. Listerism, complicated and imperfect as was the method, changed all this, and the mortality-rate was immediately and enormously reduced. When I was a student, hospital gangrene had just disappeared, and I never saw a true case of it; but the horror of it still lingered in the minds and stories of the older surgeons. Let us hope that the work of Carel, Dakin, and others shall result in a similar decrease in mortality and mutilation.

Perhaps the present technic may be simplified, and the chemical agents employed be improved, but, as I have said elsewhere, one should follow implicitly the directions of him who has used and

studied the method before making improvements and changes; and this is a good general surgical rule to follow.

Of late there has been a hot discussion on cholecystostomy vs. cholecystectomy, and for years there has seldom been a surgical society meeting that has not heard at least the rumblings of the storm. So-called "best authorities" honestly differed, and still do differ, as to the operation of choice, as at the meeting of the American Surgical Association at Cincinnati when the morning paper came out with the big headline: "Charlie says cut 'em out; John says leave 'em."

I do not think that Dr. Mayo and Dr. Finney have yet come to an agreement on the subject, which goes to show that the best of men may differ and that there is probably truth on each side.

The advocates of drainage point to the simplicity of the operation, and the comparatively low immediate mortality, while those of us who consider excision the operation of choice believe the ultimate mortality is no higher and the results better. One thing is certain, however, and that is, that drainage is much safer in the hands of an inexperienced surgeon and that certain desperate cases must be drained if they are to be saved. With this statement I feel sure both "Charlie" and "John" would agree.

Since the day when I saw Billroth do the first successful pylorotomy, to the present day, I have followed the development of gastric surgery with the greatest interest, performing many operations of various types and with varied results for the relief of the ills to which that unfortunate organ is heir. Here, certainly, the surgeon can be proud of the progress made, but can anyone claim that our methods and results are even now perfect? Certain general principles are pretty well established, but new suggestions are constantly turning up that show there are things yet to be improved. Even the change from silk to linen, and then to catgut, means much, as it shows that there is a constant improvement in technic and that certain unpleasant results and risks are eliminated. One point that is certainly not universally agreed upon is as to the value of excision over gastro-enterostomy and vice versa in duodenal ulcer. The generally accepted fact that cancer in this region is due to previous and long-continued benign ulceration would lead one to believe that in all cases where the ulcer has existed for a considerable period of time, excision is certainly the most radical method

of cure, as it is absolutely impossible to examine microscopically all such ulcerations at the time of operation. The greater mortality from pylorotomy, however, due to the more extensive operation and the length of time that it takes, makes many operators prefer the simpler operation of gastro-enterostomy. The Finney operation also has its advocates, as it more nearly restores the normal anatomical condition of the stomach.

New stitches, new mechanical appliances, new methods, are constantly being described. To the beginner the matter must seem rather chaotic. Fortunately, the stomach lends itself kindly to surgery and even maltreatment; and the results in the saving of life and relief of suffering in this field have been enormous. In this connection it is well to remember that the possible causal relation of septic foci in other parts of the body to duodenal ulcer is a matter which will require much study before all the facts in the case can be definitely stated. Certainly, of late years an enormous amount of good work has been done in this field of auto-infection, but probably teeth and tonsils will be treated and removed for crimes of which they are entirely innocent, as were the appendix and the ovary in the past.

The surgery of the large intestine has been a fruitful topic of discussion, and still is, though probably a reasonable solution, or at least a reasonable working basis, is nearer at hand than it was a few years ago when the colon of no neurasthenic woman was safe. I know of no class of cases in which it is harder to make a good prognosis or give good advice than this, and until a man is sure of his ground he had better hold his hand, for the last state of that patient may be much worse than the first. Just because a given operation on the intestine looks well in the diagram there is no reason to assume that it will work well in practice. The large intestine is certainly a most exasperating organ to deal with unless it is the seat of some definite pathological process.

Operations for the relief and cure of malignant disease are being constantly extended and perfected. We know that cancer in the intestinal tract can be radically cured by operation in certain cases. The results now being obtained in resection of the large intestine, the rectum, and the stomach for cancer are far beyond what we could have hoped for a few years ago, owing to the progress in the operative methods, including the avoidance of shock and deaths from anes-

thetia. Cancer of the mouth and tongue is now largely being removed by the cautery instead of the knife with, I feel sure, increasingly good results. Step by step we are pushing ahead in our operative fight against malignant disease, and, though the success of the few in desperate cases may stimulate the many to attempt the impossible, the net result to mankind is good. Unnecessary and inadequate operations will probably always be performed through ignorance and excess of zeal. If an unfortunate patient can be benefited by a severe operation, however dangerous to life it may be, for Heaven's sake let it be done; but, if his pain, mental and physical, and his general discomfort cannot be materially relieved, it is better to resort to other means for palliation.

And now we come to two vast subjects that have to do with the treatment and relief especially of malignant disease,—serum therapy and radio-active rays. With what joy and enthusiasm the surgeons hailed the announcement of both these agents! The pendulum has been swinging back and forth, and is not yet at a standstill; and, as long as the mind of man is constituted as at present, I see no reason to think that it ever will be. Serum therapy, for example—the cure-all—one that was to be. All we had to do was to make an autogenous vaccine to cure inflammatory processes; inject cultures of certain bacteria and cure malignant disease. Many patients have been so cured, there is no doubt; and thousands of others have died unrelieved in any way. It is the indiscriminate use of such methods by the untrained that has retarded the progress. After reading Coley's first articles, how many of us held out the hope of cure for our unfortunate patients, only to their disappointment and our own!

I have seen a considerable number of patients with sarcoma cured by this form of treatment; but, unfortunately, I have never had one of my own that seemed to be more than benefited temporarily, and then only slightly. It is a method that we must believe in using, and it has given definite results; but, long ago, I refused to use it personally, as I believe it should be used only by men who have had a special training in this field under competent teaching. One or two men in a large medical community are enough to experiment with and use this treatment. I still believe that it is the thing to try in all cases of sarcoma, inoperable or post-operative; but my first enthusiasm has left me. Its originator does

not claim, and has never claimed, it to be a cure-all; and we should remember that, though it is an easy thing to give a small subcutaneous injection, that is not the whole of the Coley treatment.

I am not a bacteriologist, I am not a serum-therapist: I am a rank outsider, and when I have a case that needs such special study and treatment, I refer it to those whose study and training fit them to study and treat it, as I would send an otitis media or a cataract to the aurist or the ophthalmologist. But I do not lose interest in my patient, and I follow results. At first we were told that a carbuncle could surely be cured by a few million bugs properly introduced into the system, that streptococcic infections, even of the puerperal uterus or the peritoneum, would yield to the powerful forces set in motion by a stock or an autogenous vaccine; but, unfortunately, carbuncles grew larger and more virulent, patients with abdominal infections died,—most of them,—and now we throw up our hands and ask the man trained in such matters to carry out such treatment, if it is thought best to try it. There has been too much fuel added to an already vigorous fire in many, many cases: and the resulting conflagration has been fatal. No one, so far as I know, has been able to "standardize" the subject; and, as generally, perhaps I should say frequently, used, the method is a dangerous one. Deadly poisons may be useful in surgery, as well as in medicine, but they should be used by one whose hand and mind are trained in the subject. Certain things we know a whole lot about,—tetanus antitoxin as a prophylactic, for example, and antidiphtheritic serum; but the treatment of the more common infections is still far from being sure or on a scientific basis.

Radio-active Rays.—Here we have a subject on which volumes have been written, and by whose therapeutic misuse thousands of lives have been needlessly sacrificed; but these rays have brought infinite relief, and sometimes cure, to others, when used in proper cases and in a proper manner. Hailed with the greatest enthusiasm at first as a cure-all, they were soon cast aside by a large part of the profession as a worthless nostrum, and now they are finding their place in surgical therapy. Terrible in their results when used on cases suitable for radical operation, probably a valuable prophylactic in post-operative cases, a beneficent, soothing, and retarding agent in inoperable disease, their history will be a long and strange one when written years from now. Perhaps, indeed we

hope, new inventions and discoveries may so increase the force, and at the same time tame the unruly action, of this wonderful power for good or ill, that, like steam, it may be harnessed for the lasting benefit of mankind. Much the same remarks would apply to radium. Its action is so weird and uncanny, and at the same time so powerful for destruction when brought in contact with animal tissues, that it appeals at once to the imagination. Like the *x*-rays, it will do certain things, and do them well and thoroughly. It will remove superficial growths, and it will temporarily reduce lymphomatous masses, and even for a time benefit leukemic cases; but this, no more than the *x*-rays, is a cure for advanced cancer, and, like the *x*-rays, is useful as a retarding agent. Its full history is not yet written nor will it be for years to come.

The search for a title for this paper required much thought. "Some of the Unsettled Problems in Surgery" seems most fitting, for if the first two words, "some of," were left out the writer would have the whole field of surgery to review. It is well for us to consider all surgical problems as unsettled, as liable to change, as susceptible to improvement. You will find that, when you give to an acute observer, a man with a surgical brain, any small group of cases in a large clinic, however uninteresting they may seem at first, he will get a lot of valuable facts and improved methods of treatment out of them that are astonishing. If this can be true of chronic ulcer of the leg, for instance, what an enormous opportunity for study and advance in wound treatment, in rehabilitation, in hospital management, and in all that goes to make up the honors and duties of a war; and here comes in one of the most important, most stupendous problems that faces us,—the care, rehabilitation, and employment of the vast army of men who will return from the war crippled, deformed, blind, and sick on account of injury, exposure, or poison gases.

It is not enough that these men return to their communities and their families alive, alive to be a vast economic burden for years: the man must be reconstructed, not paid; he must be taught, not pensioned. Already the profession is preparing for this great task, warned by the lessons learned from the experience of England, France, Canada, and the other countries. Just think of

it, today 19,000 artificial limbs are being fitted monthly in England alone; there are more cripples today because the improved methods of today have lowered the mortality.

But the saving of life is not enough: these masses of wrecked and shattered humanity must be saved from pauperism and made useful members of the world; suitable tasks must be found for them, and they must be taught to perform those tasks; they must be made self-supporting, and hence self-respecting so far as possible. To save these men, to train these men we must train ourselves. From the moment when the man is injured in the trenches, in the air, or on the sea, yes, long before that, when the young man is first enrolled as a soldier and subject to the temptations that surround the camp, he must have our best thought and care, and, if he comes home battered and torn, he must be skillfully guided and cared for by physician, philanthropist, teacher, and employer.

The orthopedic members of the profession are already organizing enormous hospitals both here and abroad; many of them are now in England and France studying needs and methods at short range. Think what this all means, this saving, straightening, teaching, encouraging, employing, re-adjusting. It means, not hours and days, but months and years, of patient, careful work.

When we add to the surgically disabled those incapacitated by tuberculosis, venereal disease, trench fever, and other diseases of war, we can see that there will be work for us all, those who go and those who stay at home.

One result of all this kind of work for the soldier will be the greater care in the treatment, repair, and subsequent training of those injured in civil life; and remember that this is only one of the medical problems that the war has brought to us.

This must be the last great war in the history of mankind, and it will be if it is carried through to its only logical conclusion,—the crushing defeat of German militarism and all that that implies. Our work must be thorough, and then when it is finished we can once more set ourselves to study and research in the quiet of peace.

The foe is at bay, beset by the aroused forces of civilization: let us do our part in giving the final blow with clean sword, clear mind, and strong arm to preserve our national life.

FOREIGN PROTEIN INJECTIONS IN THE TREATMENT OF ACUTE INFECTIONS*

BY JOHN G. CROSS, M. S., M. D.

MINNEAPOLIS, MINNESOTA

In presenting the following report it should be plainly understood that it is done with hesitation and with no desire to exploit the giving of foreign proteins in the treatment of acute infections. In common with other workers in the clinical field, we have observed some very interesting reactions. The data which are being collected along this line seem to indicate that a rational therapy will be evolved. At the present time the mode of action of foreign proteins introduced into the body is so little understood that their use in the treatment of disease is little more than empiric.

The use of foreign protein injections in the treatment of acute infections is a late development of vaccine therapy. Strangely enough, while the effects observed seem to controvert heretofore well-established theories of the specificity of vaccine therapy, they have only come about through the studies of opsonins, agglutinins, and the experimental attempts to produce specific antibodies and immunizing agents. Even before and independently of experimental work in this field, it was an often observed fact that a specific disease frequently improves when another and intercurrent infection is implanted before its natural course has run. Such instances as the subsidence of an acute gonorrhea with the advent of typhoid fever, and like cases, will be recalled to the mind of every clinician. With the use of diphtheria antitoxin it was frequently observed that diseases which occur coincidentally with diphtheria often improve with the use of antitoxin, as well as the diphtheria itself. With the extensive study of bacterial vaccines, came a most interesting, but puzzling, series of observations.

It would be interesting to recount the history of vaccine therapy as applied to typhoid fever. This disease has been studied to a greater extent than any of the acute infections treated by vaccines. Up to 1913 typhoid vaccine in typhoid fever was used only subcutaneously. In that year, however, several observers independently administered it intravenously in various dos-

ages. It was immediately seen that an entirely different reaction was obtained when vaccine was injected directly into the circulation from that observed by its subcutaneous use. Leaving out of consideration at this time the question of its curative value as applied to typhoid fever, the interesting point in connection with our present discussion is the fact that with its intravenous use it was observed that the reaction obtained by the injection of vaccine in this way was not specific. For example, typhoid vaccine produced equally as typical results in paratyphoid infections; and, furthermore, a colon vaccine or proteose produced similarly good results in typhoid fever, if given intravenously. The question of the specificity of the reaction to typhoid vaccine thus raised, has been under discussion ever since. In this light the reactions obtained in previous years, which could not be explained on the theory of the specific action of a bacterial vaccine, became valuable, not as aberrant results, but as instances of typical reactions to non-specific agents. For example, a vaccine given in the hope or expectation of influencing one acute infectious disease was found to have influenced quite as much a process produced by quite a different infectious agent. Jobling quotes Sir Almroth Wright as making the following comment: "All those who have had much experience with vaccines will have seen cases where therapeutic effects lying quite outside the range of the particular vaccine employed, and, therefore, as we thought, not quite creditable to science, have been obtained by vaccine therapy."

Miller has summarized, in a paper read before the American Medical Association in June, 1917, the work which has led up to the present employment of foreign proteins by intravenous injection in the treatment of acute infections. Intramuscular injection of sterilized milk has been used with favorable results. Foreign proteins are being used in a number of acute infections at the present time, either typhoid vaccine or proteose, now very hard to obtain, being chiefly employed; however, horse serum and tuberculin have also been used, as well as colon vaccine, streptococcus vaccine and the vegetable pollens.

Other diseases than typhoid fever have been

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

treated in this manner; for example, tonsillitis, pharyngitis, iritis, pneumonia, and certain skin diseases, making use of various forms of foreign protein by intravenous injection. Miller and Lusk have treated 175 cases of arthritis of the various forms, using chiefly typhoid vaccine. They have also made use of chicken serum and, in a few cases, of proteose. Apparently, the results were the same with all forms of foreign protein used.

The reactions commonly noted in any of the acute infections treated by intravenous injection of foreign proteins, are strikingly similar. With

ling and Petersen, and others, shows that rapid progress is being made in the study of the split proteins, which we may confidently expect will help to solve these problems.

Miller reports that about 86 per cent of the cases of acute arthritis which he treated by intravenous foreign protein were, apparently, either entirely relieved of their pain and soreness, or greatly benefited by from one to four injections; 6 per cent showed moderate improvement; and 7 per cent were not benefited. Apparently, all observers have agreed that endocarditis, when present as a complication, was unmodified by this

Hos. No.	Age—Sex	Type	1st Inj'n	No. Inj'ns	Course	Reaction	Leucocytes	Later History
D 476	32—M	Acute Multiple	9th day	3	Relieved after 2 days	XX	No rise	Unknown
D 545	20—M	Acute Multiple	6th day	2	Relieved after 2 days	X	13,000	Recurrence—Endocarditis
D 501	24—F	Acute Multiple	3rd day	1	Relieved after 1 day	XXX	15,200	Remained well
D 641	34—F	Acute Multiple Recurrent	5th day	2	Relieved after 3 days	XX	16,000	Well
D 748	33—M	Acute Multiple	4th day	2	Relieved after 3 days	XX	15,800	Unknown
D 67	32—M	Recurrence	3rd day	1	Relieved after 2 days	XX	15,200	Unknown
D 855	21—M	Recurrence	5th day	1	Relieved after 2 days	XX	No rise	Unknown
D 874	56—M	Acute Multiple	5th day	2	Improved	X	16,600	Gall-stones
D 365	25—M	?	21 days	1	Improved	XX	8,800	T. B.—Died later
D 950	30—M	Acute Multiple	8 days	2	Relieved	XX	16,800	Well
D 1297	43—F	Acute Multiple	11 days	3	Slowly Improved	X	16,000	Well
D 1348	34—M	Subacute Multiple	3 months	2	Improved	XX	9,400	Unknown
D 1406	18—F	Acute Multiple	6th day	2	Improved	X	21,000	Well
D 1792	24—M	Acute Multiple	21 days	1	Relieved	XX	14,600	Unknown

a sufficient dosage, following the injection within a few minutes to forty-five minutes, the patient has a severe chill, the temperature rising to from 103° to 105°, usually between 103° and 104°. The chill has lasted in our cases from twenty to thirty minutes. The rise in temperature is usually temporary, subsiding in a few hours, in some instances, to normal. There may be nausea and headache, but usually when the temperature recedes there is a great amelioration of all symptoms, and particularly noticeable in all cases has been the great relief from joint pain.

It would be futile at this time to try to discuss the cause and process of the reactions to foreign proteins. There is no theory at the present time susceptible of proof, although the work of Job-

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not usually follow intramuscular administration. Similarly, it has been found that a patient received benefit from the administration of foreign protein only when it was given in sufficient doses to produce a chill. Evidence is at hand in the literature to show that the intramuscular use of foreign protein seems to be intermediate in its benefit between subcutaneous vaccination with the same substance and its injection directly into the circulation. It must be understood, however, that as yet the subject is so new that a definite conclusion cannot be drawn. We can simply say that by the use of a sufficient dosage of foreign protein substance in acute arthritis, as well as in some other acute infectious diseases, it is often possible to modify some of the worst features of the process and, apparently, in many instances at least, to shorten the disease appreciably without harm to the patient.

At the present time it may be seriously doubted whether the practice of treating acute infections in this manner should be generally adopted. Certainly, before using such a therapeutic agent the susceptibility of the patient and the toxicity of the product to be injected should be very carefully determined. If a bacterial emulsion, such as typhoid vaccine, is made use of, this is comparatively easy to do, since a small enough dosage can be used at first to be within safe limits. If, however, it is proposed to use one of the serums, then careful testing against sensitization and anaphylaxis is necessary, and if the patient is found sensitized by cutaneous test, it is possible to prepare him, as described by Rufus Cole, just as in administration of diphtheria antitoxin, so that he is desensitized.

Our own experience as to the relation of the severity of reaction to the benefit derived by the patient, has been in entire accord with that noted by other observers, that is to say, that with the higher dosage and greater severity of the chill the patient has experienced greater and quicker relief than with the smaller doses. In our series also, as well as in those of others, milder reactions have made it necessary to use a greater number of injections, while often a single severe reaction apparently relieved the patient.

Our cases were not selected, but were taken as they came in the course of admission over a period of three weeks. In all, fourteen cases received injection of foreign protein in the form of typhoid vaccine, and the chart shows, in general, the reactions produced.

We have never in our experience observed any

serious results from the use of these injections. The uncomfortable symptoms directly following the injection have not been protracted. Very few of our patients have objected to a second injection; the majority of them, indeed, have asked for a repetition of the treatment if the joint pain returned.

As will be seen by reference to the analytical chart, some of the cases treated with foreign proteins were also treated, either before or afterwards, with salicylates. That the one treatment has had any effect on the other, we have not been able to observe. The active handling of these cases has all been done under the direction of my assistant on the staff, Dr. Charles N. Brooks, for whose careful observations and records I wish to express my appreciation.

As regards the complications of rheumatic fever: We have not seen that the use of typhoid vaccine intravenously has had any effect whatever. None of the cases in this series has developed delirium. It is certain that there is no greater incidence of endocarditis than under the salicylate treatment. We have not had occasion to use the vaccine with an incompetent and failing heart from rheumatic endocarditis. There have been, however, as will be observed on the chart, instances of endocarditis which did not deter us from applying this form of treatment and were not affected by it.

The foreign protein used in all cases has been a typhoid vaccine containing one billion organisms to the cubic centimeter. We have taken this emulsion, which had already been heated for one hour to 55° C., and resterilized it at 70° C. for a second hour. Whether this reheating may have some effect in further splitting, or releasing, the proteins contained in the bacterial bodies, contributing in that way to the results obtained, is a query which, it is to be hoped, may be answered in the future. We have not learned that other observers have used this method of reheating vaccine, the usual product being simply sterilized once at from 52° to 55° C. for one hour. Our dosage has varied between 25 and 250 million to each injection intravenously.

In Case No. 476 (see table) the onset was one week before admission, there being acute arthritis of both knees, ankles, one hip, and one wrist. The first intravenous injection was given on the ninth day, with a moderately severe reaction. In ten hours the patient's temperature had dropped 3.5°; after three injections he was apparently well. The temperature remained normal, and all

pain and soreness were gone. We could not determine that the slight leucocytosis in this man bore any relation to the treatment; it seemed to parallel the inflammation of the joints.

In Case No. 545 the patient received two injections, had a moderate reaction, and the temperature became normal on the day following, with no recurrence. He writes that he had another attack of rheumatism after leaving the hospital, during which he had heart trouble.

Case No. 501 is the most striking of our series. The patient received only one injection, and had a very marked reaction, the temperature going to 105.6°. Most of the acute symptoms due to her rheumatism subsided within twenty-four hours after the first injection, which, it will be noted, was given on the third day after onset. The fever never returned, and she reports that she has been well and working every day since. This is the more noteworthy because this patient had just recovered from a previous attack of rheumatism, which was treated with salicylates for six weeks, and she was discharged from the hospital only three days before the onset of the present attack.

Case No. 641 is of an entirely different type. The foreign protein undoubtedly relieved some of his symptoms. Since the patient's teeth were removed, later on, he has had no rheumatism at all.

Case No. 748 reacted like most of them. The temperature remained normal after the second injection reaction had subsided, and he left the hospital apparently well.

In Case No. 67 the first attack of arthritis lasted two weeks, and the patient was given salicylates. Two weeks later he had another attack, all the large joints being affected. Another case injected relatively early after the onset with apparently prompt relief.

Case No. 855 is practically a repetition of the last case in a somewhat younger patient.

In Case No. 874 the patient felt relieved after his injections, but continued to be infected, probably, from his gall-bladder. He reports by letter that he had an operation for gall-stones four months later.

Case No. 365 was probably a tuberculous one. The joint symptoms, however, seemed to subside after foreign protein injection.

In Case No. 950 the patient had had tonsillitis. He received two injections of protein, which relieved the pain, fever, and other symptoms arising from his acute arthritis. The tonsils were removed one week later, and he has since been well.

Case No. 1,297 were severe and refractory. All

the large joints were badly involved. The first injection was given on the eleventh day, with moderate reaction only. In all she was given three injections, the pain returning after the first two; after the third pain was relieved and stiffness gradually disappeared. She was discharged in two weeks and has been perfectly well since.

Case No. 1,348 was a subacute arthritis of three months' duration. The patient had only a moderate reaction. He received two injections which seemed to give temporary relief; but he continued to be re-infected, probably from his teeth, and had also a chronic nephritis.

In Case No. 1,406 the patient had been sick for four days before admission with a typical acute rheumatism; temperature, 103.2°. She received the first injection on the sixth day, and after the second one she was apparently entirely relieved. She writes that she has remained well ever since. While this patient had a marked leucocytosis, it could not be connected with the foreign protein administration, and yet with only a moderate reaction, as shown by chill and fever, she had apparently complete relief from the arthritis in two days. This is somewhat at variance with the usual course of events.

In Case No. 1,792 the patient received his first injection three weeks after the onset of his attack. There was a marked reaction, but he was free from pain twenty-four hours after. The temperature remained normal from that time. This patient had a long-standing mitral regurgitation and a moderate degree of chronic nephritis.

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DISCUSSION

DR. GEORGE D. HEAD (Minneapolis): I do not feel that this very interesting paper should go without some discussion. It seems to me that a very large place will be found, in the therapy of the future, in the use of the proteins. I do not know how it has struck the rest of you, but I think that, so far as vaccine therapy is con-

cerned, it has largely shot its bolt. The use of the proteins or the modified forms of albumin of one type or another, in connection with the therapy of infections, since the very interesting work of Vaughn and his co-workers, will merit a lot of further investigation.

I have been very much interested in the study of the various proteins in connection with their relationship to tuberculosis. In my own laboratory we have been doing some experimental work dealing entirely with experimental tuberculosis in guinea-pigs along the lines laid down by Dr. Cross' paper, and I must confess that I am very much in sympathy with his efforts in connection with the treatment of the acute multiple arthritides by these agencies.

Looking at his series of cases from a critical point of view, as he has expressed,—and we all know his conservative tendencies,—he has made no therapeutic claims at all. I would like to see a larger group of cases reported. Acute articular rheumatism is a very variable disease in its duration. The cases run a rather mild course, and are well in a week or so. Others have a longer duration, two to four weeks, while a considerable percentage are more persistent, and terminate at the end of six to ten weeks.

A knowledge of the natural history of the disease is very important, and all therapeutic results should be studied in the light of this knowledge. This fact was clearly and definitely shown years ago by Austin Flint in his very interesting studies of the natural history of acute articular rheumatism, in which he divided a large series of cases into various groups, some of them running a short course, others running a longer course, and still others running a very protracted course.

Of course, if Dr. Cross' cases happened to be a group of rather mild forms of the disease, it might be possible to explain on these grounds the unusually good therapeutic results which he has reported. Looked at from the most critical point of view, it appears, however, that this form of treatment had had apparently some effect upon the natural course of the disease.

I would like to ask one question, namely, whether or not the relief from symptoms, as shown on the chart, really indicates the termination of the infection,—that is, even though the patients might be relieved of their joint symptoms, namely, their pain and swelling, etc., were they still complaining at all of lameness or soreness in the joints when they got up and around?

I would like to ask Dr. Cross what his opinion is in regard to the claims made for phylacogen.

DR. C. N. HENSEL (St. Paul): I would like to ask Dr. Cross whether he made the cutaneous tests for protein sensitization in these cases before he gave his inoculation of typhoid vaccine. If so, did he note any relation between the degree of skin-reaction and the febrile reaction following the inoculation? Did he get a better result in the sensitive cases? or did the fact of the patient's being sensitive to foreign protein, have anything to do with the patient's improvement?

DR. J. G. CROSS (closing): Dr. Head asks whether these were mild cases. They certainly were not. Most of them were severe, that is, they had multiple acute arthritis, very severe pain, and fever, not merely pain and stiffness. Some were decidedly refractory cases.

After treatment with the foreign protein these patients seemed to behave about the same as the case of rheumatism in which the salicylates have been used after the disappearance of pain and fever. There was some stiffness and tenderness remaining, but no spontaneous pain, except on movement, and this disappeared rather promptly.

As I stated in the beginning of this report, I distinctly dislike to put forward the use of foreign proteins in the treatment of rheumatic fever. As yet we know too little of the mode of action to advise that foreign proteins be used in the acute infections. At this time it is intended merely to describe the very interesting reactions that are being observed.

The use of proprietary shotgun bacterial vaccines in rheumatism has been referred to. That benefit has sometimes been derived from this material cannot be doubted in the face of many intelligent reports; however, the reaction to foreign protein of different sorts undoubtedly explains that these patients may have derived benefit without there being any specific action in the bacteria employed.

To answer Dr. Hensel's question: We made no tests for sensitization in these cases because we did not expect sensitizing to result from using typhoid vaccine. If, however, some other foreign protein,—horse serum, for example,—were to be used, in which anaphylaxis might result, it would be very easy to apply an intracutaneous test. If the patient is found to react, he can very easily and simply be desensitized. As we applied no tests of that sort in this series of cases, I cannot say whether any of them were sensitized to other substances.

THE RELATION OF THE THYROID TO THE OTHER DUCTLESS GLANDS*

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A year ago, before this Association, I reported certain work concerning the active constituent of the thyroid and its physiologic function. I now wish to report further progress in this investiga-

tion. The compound containing iodine which has been isolated in crystalline form from the thyroid has been analyzed, and its empirical and structural formula determined. It appears to be an indol nucleus to which is attached a side chain of three carbon atoms terminating in a carboxyl

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

group, and on the alpha carbon to the nitrogen there is a carbonyl group. On the benzene ring there are four hydrogen and three iodine atoms.

Investigation of the physiologic activity of this substance shows that in cases of thyroid deficiency the administration of this pure crystalline substance alone will relieve the symptoms, and furnish the same relief as desiccated thyroid itself. This has been established in many cases, and it appears that the physiologic activity of the thyroid is due to the presence of this substance.

In a consideration of the physiologic function of the thyroid, one is confronted with a very confusing mass of clinical and experimental results. The changes occurring in a patient with thyroid deficiency or in an experimental animal by the administration of thyroid, are so great that practically every cell within the animal organism is changed. The effects are felt throughout the nervous system and the circulatory system, the rate of metabolism is enormously increased, and even the skin and hair show revolutionary changes. These effects are not produced by ten or a dozen different substances contained in the thyroid secretion: they are produced by a single substance. The function of the gland must be some simple single chemical reaction which is necessary for the life of the various cells and tissues of the animal organism. As long as the active constituent of the thyroid was known only by its clinical and experimental results, nothing definite could be proved concerning the thyroid in the nature of a chemical reaction. On isolating the substance in pure form, opportunity was given for the first time to actually determine the chemical possibilities which are present in the substance.

Two facts have been established in regard to the chemical activity of the compound: In the first place, there is a carbonyl group, which reacts vigorously with the NH_2 group; in the second place, there is present an amino-group, which reacts with extraordinary activity with the carboxyl group. It will be noticed that we have in these two groups all the necessary mechanism for reacting with amino-acids. Investigation has shown that the pure crystalline active constituent of the thyroid in vitro does react with amino-acids, and this furnishes the first chemical evidence for the exact nature of the action of the thyroid hormone.

When it is administered either intravenously or subcutaneously or by mouth there is no immediate effect. The first physiologic response

may be delayed as much as seventy-two hours, —in fact, the injection of a large amount may actually cause a suppression of metabolism instead of an increase. The physiologic response appearing at the end of from twenty-four to seventy-two hours is an increase in pulse-rate, increase in nervous irritability, increase in the basal metabolism with increase in the nitrogen output.

The injection of the active constituent of the thyroid in different animals produces widely varying effects. The injection of different amounts per kilo of body-weight produces paradoxical results. It is evident that a physiologic response to the thyroid is composed of several factors, and it is the varying intensity of these factors which produces the different physiologic responses to the injection of the same substance. Before we can definitely proceed in this problem it is necessary to assign, at least tentatively, some chemical reaction produced by the thyroid hormone.

It has been suggested above that the chemical reaction resulting from the administration of the thyroid hormone is the interaction between this substance and an amino-acid.

While it has not been proved beyond controversy, there is much evidence to support the hypothesis that the function of the thyroid is to furnish the animal organism with ammonia resulting from the deamination of amino-acids. The amino-group in amino-acids is unavailable for the formation of urea and other nitrogenous compounds until it has been split out of the amino-acid. This deamination appears to be the function of the thyroid.

The deamination of an amino-acid may be regarded as a necessary step leading to the formation of urea, which is a by-product, without great physiologic significance. On the other hand, the deamination of an amino-acid may be regarded as the initial step in the elaboration of certain nitrogenous compounds from ammonia which are essential to the body economy. This latter view we are inclined to emphasize, for there is evidence that the nitrogen metabolism starting from ammonia has greater significance than merely the elimination of nitrogen from the body in the form of urea.

It now becomes apparent that the study of the function of the thyroid assumes the form of a definite problem in the study of the metabolism of nitrogen. From a review of the experimental and clinical knowledge concerning the other

ductless glands it seems most probable that they too are involved in the metabolism of nitrogen. Thus it is known that removal of the parathyroids produces a disturbance in the nitrogen metabolism. Nitrogen compounds not normally present in the urine appear, and the percentage of the different nitrogen constituents is greatly altered. Removal of the pancreas causes an enormous increase in nitrogen metabolism. Removal of the adrenals and the hypophysis results in changes in metabolism and death.

In order to throw some light on this problem I have carried out a series of experiments during which amino-acids were injected into animals. It is possible to produce widely varying experimental results in different animals simply by the continuous intravenous injection of amino-acids, that is, by producing an intense nitrogen metabolism. The experimental results vary in the animals according to the particular way in which each specific animal can maintain this high nitrogen metabolism.

From an analysis of these results it seemed probable that the adrenal cortex is involved in the metabolism of ammonia, and hence is closely linked with the thyroid in the production of a physiologic response by the thyroid hormone. In order to establish this experimentally the adrenals from a cat were removed and were ground up in physiologic salt. Ammonium carbonate was added to this solution. After standing thirty minutes there was almost no ammonium carbonate remaining in the test-tube; the adrenal had converted the ammonium carbonate into something in which the ammonium radical was no longer present. We have investigated this reaction somewhat in detail; and, while the work has not yet been completed, we have shown that normal blood does not possess the power to convert ammonium carbonate into other substances, but that, after the adrenal has been stimulated, it does possess this power. The same condition is true of the adrenal itself. The normal adrenal, removed without fright or other stimulation of the animal, is incapable of acting on ammonium carbonate, but after stimulation, either by fear, by electric impulse, or by injection of certain substances intravenously, the adrenal will convert ammonium carbonate into some other substance.

We have certain evidence that the parathyroids and the thymus are also engaged in the conversion of nitrogen compounds into the normal end-products of nitrogen metabolism. These will not be discussed in detail at this time, as we

realize that they must be still further corroborated; but we have sufficient evidence to show the dependence upon the ductless glands for the metabolism of nitrogen. The formation of intermediary products between ammonia and urea and probably other nitrogen constituents of the urine, is brought about by the secretions of the endocrine glands. The thyroid hormone is involved in the first split of ammonia from the amino acids. The adrenal cortex secretion then converts this substance into some other and the secretions of the thymus, the parathyroids, and other ductless glands are involved in the further elaboration of the nitrogen constituents which finally appear in the urine. It, therefore, is evident that the administration of the thyroid hormone merely starts an increased rate of production of ammonia, which, in itself, does not produce hyperthyroid symptoms. It is only when the other ductless glands are stimulated that the reaction is carried on at a rate sufficient to change the basal metabolism, the irritability of the nerves, and the other effects produced by administration of the thyroid hormone. These reactions take place within the tissues and, in part, within the blood; and the speed with which they occur, and hence the equilibrium maintained, producing an increase or decrease in metabolism, depend on the stimulation of the various endocrine glands and the ability of the tissues to carry on the reactions which are made possible by the secretions from the various glands.

DISCUSSION

DR. HENRY L. ULRICH (Minneapolis): I would like to ask Dr. Kendall if he has any data of the synthesis from extracts of the ductless glands, in experiments done *in vitro*. He mentioned the deamination of the amino-acids, and the destruction of ammonia in the test-tube. Has he any records of the synthesis of ammonia, for instance?

DR. HERBERT JONES (Minneapolis): I think our treatment of thyroid conditions is very unsatisfactory, whether we have a lack of secretion or oversecretion.

I would like to ask the doctor if there is any prospect of a test of the blood, or of any other secretion, which would give us a definite laboratory result, as to whether we have a hypo- or a hyper-condition of thyroid secretion into the blood. I suppose the blood is the most important one of the bodily fluids in that relation. If we could follow out these researches so as to give a practical test of the activity or productivity of the gland, it would seem as if it would put us on a very much more satisfactory basis.

DR. W. H. CONdit (Minneapolis): Dr. Kendall is surely a master of his subject; and when I have visited his laboratories he has always filled me with enthusiasm.

I want to ask him whether, in his search in the

physiological complex of hyperthyroidism, he has discovered anything that will help us out in the toxemias of pregnancy? There is no question but that, in the last two years and especially in the last year, a tremendous increase in the number of cases of toxemias of pregnancy, per hundred, has been recorded in the clinics all over the United States. I recently had occasion to look up our series at the University. In the obstetrical service at the University Hospital we have had 14 cases of toxemia in 329 cases, over a period of seven months, against 17 cases occurring in seven years before in 3,380 cases. It has been my experience in my private practice to observe 2 in consultation and 3 among my own cases, in a period of six weeks.

We know that toxemia of pregnancy is due to some physiologic change, either in the metabolism of the ductless glands, giving those complex symptoms, such as polyneuritis, liver and kidney complications, brain-pressure disturbance, and other complex conditions associated with the disturbances of pregnancy. I cannot but think that, in this work of establishing the chemistry of the ductless glands, we are going to find the key to the situation of the toxemias of pregnancy.

I would like to get a suggestion from Doctor Kendall in the matter.

DR. KENDALL (closing): First, about the synthetic action in the test-tube: The destruction of ammonia by the adrenal cortex is a destruction of ammonium carbonate, but it is a simultaneous synthesis of another nitrogenous compound.

In regard to the test for thyroidism: There is an excellent one, and one which has not been used very much, but which will undoubtedly be used more and more. It is the determination of the rate of basal metabolism, that is, the metabolic rate of a person at rest at least twelve hours after eating food.

I can illustrate this test by a case now at the Mayo Clinic. It is a case of myxedema with a metabolic rate of 30 per cent below normal. She was given an intravenous injection of five milligrammes of the thyroid hormone in pure crystalline form. Twenty-four hours later her metabolism was minus 32 per cent. She was given another injection, and twenty-four hours later her metabolic rate was minus 28 per cent. We gave her another injection, and twenty-four hours later her metabolism was minus 18 per cent. She was given still another injection, and twenty-four hours later her metabolic rate was minus 12 per cent. We then stopped taking the metabolic rate, because the laboratory was closed, but the thyroid hormone was given daily.

Two weeks later, on a reduced dose, we again determined the metabolic rate. It was 17 per cent above normal. Administration of the thyroid hormone alone had increased the metabolic rate 49 per cent. From 32 per cent below normal at one time, it was raised to plus 17 per cent above normal, which is a total change of 49 per cent. That is the most conclusive proof of hyperthyroid activity.

The daily dose was reduced and her metabolic rate is now 7 per cent above normal. We shall reduce the daily dose until she is getting that amount which will just maintain the normal rate of metabolism.

We have also treated cretins, and we have found that $\frac{1}{500}$ of a grain a day is sufficient for certain cretins. With others it is a little more, but it is a microscopic amount. If the optimum amount is exceeded it is reflected in the metabolic rate.

In regard to the toxemias of pregnancy and the explanation of uremia: I feel sure that we shall be able to throw some light upon it.

In regard to this work of the conversion of ammonia into urea: I was struck with the low percentage of total nitrogen in the form of urea in certain experimental animals which presented tetany and convulsions. The total nitrogen in the urine was high, but the percentage of that total nitrogen in the form of urea was very low.

One theory which would apply would be that there was a substance there which would go into urea, but it was not urea when it was voided. The question was, Would it go into urea standing in a test-tube instead of in the body? We tried that out; and in twenty-four hours after the urine had been voided, there was 400 per cent more urea formed than at the time the urine was voided.

We have not had time to apply that clinically very much, but we have, in certain cases of exophthalmic goiter, shown that there was an increase in urea of 10 per cent simply on standing twenty-four hours after the urine had been passed.

We know that in the toxemias of pregnancy there is a disturbance of the nitrogen metabolism. This same thing holds,—low urea and high nitrogen.

It seems very probable that the mother substance of urea and the mother substance of these toxic nitrogen compounds are the same. If this substance is converted into urea the patient lives in a normal existence. If, on the other hand, it is converted into these other nitrogenous compounds, which are toxic, convulsions and toxemias result. There is every reason for assigning these changes in the nitrogen metabolism to certain ductless glands.

FOCAL INFECTIONS IN THE NOSE AND THROAT. MEANS OF DIAGNOSIS AND ELIMINATION*

By W. E. PATTERSON, M. D.

MINNEAPOLIS, MINNESOTA

In selecting this subject for a paper, I do not presume to be introducing theories that are entirely new to any of you; but, as there is prac-

tically nothing to be found in our present day text-books pertaining to focal infections of the ear, nose, and throat, it is surely not out of place at this time again to recall to mind some of the facts relating to this most important subject.

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, at St. Paul, October 11 and 12, 1917.

The developments made along this line during the past three or four years are of such significance that, in my opinion, they mark a great epoch in the advancement of modern medical science.

Focal infections are not wholly confined to the teeth, tonsils, and accessory sinuses; but, on the contrary, we may find the same constitutional effects resulting from a diseased appendix or from an abscess around an ingrowing toe-nail that occur from an infected tonsil or sinus, granting that the organisms are of like virulence and under the same absorptive conditions; and no doubt there are common foci that we have not yet discovered.

As regards the comparative significance of the various sites of infection, I would state that, in so far as my experience and observation go, deep alveolar infections play the greatest part in systemic disturbances, largely due to their prevalence and the absolute lack of surface drainage.

Next in order would come the faucial tonsillary infections, and especially those cases in which the tonsils have some time previously been unsuccessfully operated on; and as a result the follicles closed by a cicatrix which compels the absorption of toxins that might otherwise drain from open follicles.

For perhaps twenty-five years the medical profession has recognized that tonsillar infections, rheumatism, endocarditis, and chorea are in some manner or other associated, and especially that acute tonsillitis is very commonly followed by rheumatism; but the idea of the tonsils being a continuous source of toxemia when apparently in a perfectly quiet and non-inflammatory state had not germinated in the minds of our profession.

Tonsils were removed, or more often partly excised, only when they were so large as to interfere with respiration, deglutition, or phonation. Teeth were never extracted for any reason if they could be successfully filled or crowned, and a sinus was never thought troublesome unless there was a visible discharge of pus, or it caused pain.

Today we recognize that some of the most virulent forms of systemic infection arise from some of the least suspected sources.

We have learned that the x-ray is a valuable adjunct in the diagnosis of these head-infections, but much depends upon the interpretation of the skiagram, and it must be studied in conjunction with the other means of diagnosis.

Patients often suffer from some chronic infection for years without apparently any particu-

lar effect. Then, perhaps after some minor ailment which reduces vitality, such as exposure, trauma, or a "cold," an eye will suddenly become inflamed, or there will be a precordial pain indicating a pericarditis, or a joint will become suddenly swollen.

That such minor ailments are only the exciting cause, and not the predisposing cause, is shown by the fact that the organ affected continues to give trouble long after they have ceased to act, while it will recover rapidly with the cleaning of the septic area. Patients whose mouths are septic frequently take a long time to recover from an operation. If, however, the focus is removed, they will recover rapidly.

I shall not weary you by reciting cases, although I could mention many cases of iridocyclitis that have cleared up almost simultaneously with the drainage of an alveolar abscess or the removal of diseased tonsils; and I have also seen choreic symptoms disappear in the same way in children who have been relieved of infected tonsils. In young adults suffering from acne vulgaris, a cure results in many cases when a tonsillectomy has been performed. Several years ago Dr. J. B. Murphy claimed that gastric and pyloric ulcers were induced by metastatic infections, and in most cases, he thought, from an infected appendix. We are of the opinion today that a gastric ulcer or an appendicitis may result metastatically from any remote septic focus.

The most common constitutional symptom of a focal infection, and one concerning which very little mention is made, is malaise, or extreme fatigue; and we are very liable falsely to attribute such malaise to over-work; while, if we would set about to locate and remove the focus of infection, the constitutional symptoms would promptly disappear.

Among some of the commoner diseases which we have every reason to believe can result from these chronic sources of toxemia, may be mentioned nephritis, arteriosclerosis, the various cardiac infections, osteomyelitis and periostitis, thyroiditis, phlebitis, gastric and duodenal ulcers, hepatitis, migraine, neuralgias, arthritic infections, including arthritis deformans, anemias, inflammatory eye conditions, various skin diseases, and many forms of nervous disorders.

The great importance of making a very thorough search for infected foci in cases of nephritis, is evident, for, in many cases, the result of clearing up some old pus-pocket will be a cure of the kidney condition.

There is one class of patients that we all have to deal with, and one that is often most neglected, the syphilitic. We are liable to overlook every other possible etiological factor in treating such a patient's disorders; for we attribute every symptom to the syphilitic toxemia, whereas, if we stop to consider that he is even more liable to have suppurative foci than the non-syphilitic patient, and should have the same careful consideration, we oftentimes would have much less difficulty in treating his various disorders. I have seen a severe form of iridocyclitis in a syphilitic patient refuse to be affected in the least by an antisiphilitic treatment, and clear up almost immediately following the drainage of an alveolar abscess.

As to the relative significance of the various foci in the head: In my opinion the teeth come first, the faucial tonsils second, then the accessory sinuses, and, lastly, the middle ear and mastoid.

The factors which determine the effect of these chronic toxemias upon the individual are the virulence of the organism, drainage, and natural immunity. We know that some organisms will attack only certain tissues, and the virulence of all organisms is affected by the condition under which they develop.

According to Rosenow, streptococci vary in virulence in terms of their exposure to oxygen, and one strain of streptococci may be converted into another of higher or lower virulence. Therefore, pus under retention is far more virulent than pus draining from open sinuses, tonsils and pyorrheal pockets, not only because there is more absorption, but, in the other case, because the micro-organisms are more or less exposed to oxygen. An organism on a surface wound may be quite harmless, but that same organism implanted in the deeper tissues may become a most virulent host.

As regards the methods of elimination of foci of infection: I am not as radical in my methods of treatment as I am in announcing my view on the etiological aspect; but, on the contrary, my aim and practice is very much in favor of conservatism. The indiscriminate extraction of teeth, the enucleation of tonsils, and the destruction of intranasal tissue is a practice to be most strongly condemned. As regards the preservation of our masticating surfaces: I think the prophylactic treatments that are being taught in our public schools at the present time are doing more than we can estimate toward oral sanitation. Every patient suspected of an oral or sinus infection should have the benefit of an x-ray examina-

tion, a leucocyte count, and the combined judgment, in many cases, of a dental surgeon and physician, and a diagnosis made by exclusion.

The most conservative treatment commensurate with the need for removal of the septic area, is advised. Vaccines have proven to be a most valuable aid in many cases in conjunction with local treatment. The treatment of tonsillar infections, applies not only to the faucial tonsils, but to the entire so-called "tonsillar ring," including the lingual and pharyngeal tonsils.

The means of dealing with the tonsils is largely a matter of choice with the operator, as there is no one method that is successful in the hands of all surgeons. The principle that we all try to observe is a complete enucleation with as little trauma to the surrounding tissue as is possible, having special regard to the fossæ of Rosenmüller and to the faucial pillars. It is not so much the instruments that are used that result in a successful tonsillectomy as the skill and good judgment of the operator. Patients often think, as do some physicians, that any doctor can remove tonsils, which accounts for a great deal of poor tonsil surgery. A successful tonsillectomy is not a simple operation, but is one that requires much practice and special training. There are many good general surgeons who can do an excellent gastro-enterostomy or a cholecystectomy, and yet do a miserable tonsillectomy.

As regards sinus infections: We find they are of much more frequent occurrence than is generally supposed, and often present a very obscure symptomology. With a sinus infection in mind, we set about to locate it by looking for a discharge of pus in the middle-turbinate region, where, with the exception of the sphenoid, such discharges have their natural outlet. We proceed by making pressure over the sites of the various sinuses to elicit tenderness; by use of transillumination and the x-ray; and, very often, in case the maxillary sinuses are under suspicion, in order to further verify our findings, we make an artificial opening beneath the lower turbinate, and irrigate.

Sinus infections very often date from an influenza or one of the exanthemata; but, in the majority of cases, we find some intranasal abnormality to be the predisposing cause. A deflected septum may have a tendency to direct air currents laden with bacteria into one sinus more than another, and thereby cause a direct infection; but, more often, the pressure effect of a deflected septum, a hypertrophied turbinate, or

a polypus will occlude the exit of secretion from a sinus, and thereby predispose to infection.

The essentials in treatment of sinus infections are drainage, ventilation, evacuation of the pus, and often, where there is a resultant anemia, some form of tonic treatment.

To obtain drainage and ventilation the more conservative methods of treatment in common use are to be recommended; but, in exceptional cases, the most conservative treatment is a radical operation.

Frequently, where turgescence of the turbinates is the most prominent factor in obstructing drainage, we are able to get very satisfactory results from the application of cocaine and adrenalin, followed by the suction treatment, and the application of some one of the non-irritating silver preparations in glycerine; and this or a similar treatment is always to be first carried out in acute sinus infections several days before resorting to operative interference, except, of course, the cases where immediate drainage is imperative.

Where a deflected septum is the principal factor, a carefully done submucous resection, to remove the deflection portion, is a very conservative treatment and one that promises the most permanent relief with practically no destruction of functioning mucous surfaces. The universal adoption of this operation to regulate intranasal space has eliminated to a great extent the practice of removing turbinate tissue.

In this connection it should be said the sacrifice of the middle turbinate often predisposes to sinus infection rather than prevents it. The relative position of this organ to the ostia of the sinuses, indicates that its function, in part, is to protect the delicate mucous lining of these ostia; and the indiscriminate destruction of middle-turbinate tissue merely to get space is to be condemned except where there is some form of over-

growth, such as polypi, or where it is necessary to do so to make a direct entry into the sinuses.

In treating the maxillary sinus, it is often necessary to establish a means of direct permanent drainage, as many cases do not respond to puncture and irrigation treatment. In these cases we commonly resort to the semi-radical Canfield-Ballinger operation, which is a modification of the Denker operation, and consists of the intranasal submucous resection of the naso-antral wall. The approach to the antrum is first made through the crista piriformis by means of the chisel or rongeur; and, as soon as entrance to the antrum is gained, the osteal wall beneath the lower turbinate is readily removed by means of a bone punch. The advantages of this operation are that it does not interfere with the lower turbinate, is very quickly done under local anesthesia, and furnishes adequate space for good drainage and irrigation.

I have not attempted to give in detail any particular symptomatology or treatment for these numerous sources of systemic infection, but my principal aim is to urge a more careful search for these foci of infection, and a greater reliance, in all constitutional diseases of obscure origin, upon the x-ray, the temperature-finding, and the leucocyte count, in conjunction with inspection of the suspected areas. We find many cases of latent non-suppurative mastoid infection with no particular local symptoms; yet, with perhaps a history of some months before of having had an acute otitis media with only a slight serous discharge of a few days' duration. The x-ray may show in these cases an area of active necrosis in the mastoid. And we have learned that, if a patient has but one filled or carious tooth, regardless of the indications of normal tissue surrounding, its process may harbor an abscess, and do so without pain or tenderness. The x-ray is the only reliable means of detection.

MYASTHENIA GRAVIS, WITH REPORT OF THREE CASES*

By LEO M. CRAFTS, B. L., M. D.

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This singular and rather rare malady has been very aptly described by Oppenheim, one of the earliest observers, as "a chronic, progressive, lethal neurosis particularly characterized by

symptoms of glossopharyngo-labial paralysis without atrophy." The classical paper of this writer and his associate, Jolly, who named the disease, was the first clear description in literature. Wernicke and Erb were also early observers of the condition.

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

Much attention has been given to the question of etiology by all writers, but with little tangible result; and up to the present time nothing has been definitely established. In many respects it behaves in consonance with our theories of metabolic disturbances attributable to derangement of function in the endocrine system. Gowers considers that it is of toxic origin. In a distinct proportion of cases the initial symptoms supervene directly or closely on sharp overstrain or exposure, as occurred in Case 1. Experimental ablation of the adrenals in dogs produces marked muscular weakness and bronzing of the skin. Instillation of epinephrin removes the pigmentation and improves muscular strength. From these findings some observers by analogy attribute the trouble to failure of the adrenals. And the myasthenia common in exophthalmic goiter is commonly, but rather empirically, attributed to adrenal insufficiency. Bronzing of the skin is not infrequently found, especially about the sides of the neck, in simple goiters in young girls. Thyroid feeding at times removes the pigment very strikingly, indicating that other factors than the adrenals are concerned in this phenomenon.

From the fact that the thymus gland has been quite frequently found persistent, abnormal, or neoplastic, others have concluded that this organ should be accorded chief part in causation. Weigert found a lymphosarcoma and Jones (W. A.) a thymoma. Chovstek and some others hold that it is due to overactivity of the parathyroids. Quite extensive studies in metabolism have been made by Bookman and Epstein, by Spriggs, and also by Halpern. Bookman and Epstein found no change from the normal in calcium, magnesium, phosphorus, nitrogen, or sulphur, but did demonstrate that creatinin excretion was below normal, that of ammonia unaltered. Spriggs reports marked loss of calcium, and Halpern found much greater retention of calcium than did Bookman, while in Case 3, Dr. C. R. Drake found creatinin slightly above normal (1.37 gm.).

These results therefore shed no important light on the question.

Necropsy findings are equally inconclusive, aside from the frequency of abnormalities in the thymus gland. Weigert and Buzzard found small mononuclear-cell infiltration in the muscles. In one case lymphocytic foci were found in live muscle snip. Maier claims to have demonstrated alterations in the anterior roots, and Marineso in the ganglion cells; but so far they have not been confirmed by others. No definite neural

lesions, therefore, have been revealed by autopsy; and some writers believe that the process is muscular rather than neuronie in origin.

The advent of the first symptoms is probably more frequently sudden and quite pronounced, as occurred in all three cases here recorded; but they may be vague and slight,—only mildly premonitory of the picture that is later to unfold. While the more frequent beginning manifestations involve the bulbar group with more or less marked dysarthria, dysphagia, and masticatory weakness, as in Oppenheim's case, the extremities may show the initial weakness; and ocular disturbances with partial or complete ophthalmoplegia externa and ptosis or lagophthalmus may appear first and dominate the picture, as Karpf pointed out. The lids drooping to a half way level, the upward leering cant of the head as the subject peers from under the curtaining lids, the fixed position of the globes and the head movements necessary in changing the line of vision, together with the immobile and mask-like facial expression, present a most impressive and characteristic picture perfectly illustrated in

CASES

CASE 1.—Mr. E. N. S., age 39 years; married; business man; came under observation July 19, 1916.

Mother was of a nervous temperament, had nervous dyspepsia, and her family were somewhat neurotic.

Patient had led a sedentary life since he was eighteen. A nervous temperament, but in good health until three years ago. Had been a traveling salesman for two years. Began having trouble with his stomach; had a good deal of gas. In December, 1913, on a trip in Western Canada, he walked a mile and a half against a driving wind and sleet. That evening he noticed some trouble with the left eye. The next morning the eyes were set, and immovable in any direction; and they have never been normally free in movement since then. After rest and sleep they are somewhat better. At times there has been diplopia; none at present. At times the left eye has deviated outward decidedly. There has been a considerable amount of sensitiveness over the right eye. Both upper lids droop a good deal. He is subject to the effects of draughts, and has neuralgia on exposure. About three weeks ago he got wet to the knees and chilled, and also walked up seven flights of stairs carrying two grips. Since then the legs have felt stiff, and there have been painless cramps in the muscles. At this time, too, he noticed a change in his speech,—“talked through his nose.” The muscles of the face are weak now. He sleeps well; the appetite is good; the bowels are regular; the sexual power is normal.

The patient is well developed and fairly nourished. Very bald. Color, fairly clear. Speech, somewhat nasal and flat and slightly difficult. Upper lids droop to half closure, and cannot be elevated above this point; and they cannot be entirely closed. Has very little power of elevation or corrugation of the brow. Very slight power of lateral motion of the eyeballs, none in

any other direction. Muscular power in lips and cheek muscles, slightly weak. Good strength in jaws. Tongue, free; palate movements, good. Pupils, negative. Palpebral reflex, slight; all other face reflexes, absent. Moderate jaw-jerk. Conjunctival and pharyngeal responses, normal. Biceps, active; triceps, dull; myotatic response, dull in forearms. Patellar and Achilles reflexes, active and equal. Plantar, normal. No qualitative changes in deep reflexes. Cremaster, absent. Right epigastric and left abdominal show no response. Grip, fair and equal. Slight incertitude on feet at first examination. Pulse, 78. Blood-pressure: 105 systolic; 90 diastolic (radial). Wassermann, negative. Urine, negative. During the next two weeks he complained of gradually increasing weakness in the legs and difficulty in stepping up and down.

The patient dropped out of sight for about five weeks. I was then called to see him at his home, and found he had been through a tedious series of examinations at a clinic extending over a period of ten days, and had had

ability to chew and swallow is greater. If the legs are involved he can walk or step up and down with distinctly greater ease. As the fatigue of the day comes on he has more difficulty in these muscular activities. After marked overstrain, muscles not previously affected may suddenly show moderate or marked weakness; and the whole progress of the disease may be definitely accelerated, as occurred in Case 1, in which fixation of the globes and ptosis have been the only previous symptoms. He developed immediate weakness in the legs, and further exhausting effort was followed by failure of the respiratory muscles and by death.

Except for possibly some minor pain, the condition is always purely motor. The bladder and



Fig. 1.

CASE 3

Fig. 2.

Fig. 1. Showing the ordinary facies of the patient. Note the woebegone expression. There is some simple emaciation of the cheeks, and the lips are in full muscular volume. There is a slight tendency to ptosis. The left lid droops slightly more than the right.

Fig. 2. Showing lagophthalmus. The lids do not close by over one-eighth of an inch; more marked on left.

a number of teeth extracted. He was sitting in a chair, leaning forward with marked difficulty in breathing, voice weak, and an expression of great fatigue. The lids drooped more than before, and he could breathe more easily leaning forward. There was increased difficulty in swallowing. He was seen again later in the day. Difficulty in breathing was increasing, there being almost no movement of the ribs in respiration. The next day he was in extremis, the lids drooping almost to closure and the voice only a whisper. Breathing was entirely diaphragmatic. Was unable to swallow anything. The pulse, which had been gradually growing weaker, was hardly perceptible. For the past twenty-four hours he has sat bending far forward in his chair, the head being held up constantly by attendants, the only way he could breathe at all. He died that evening, September 9, 1916. No autopsy obtainable.

Tire accentuates and rest diminishes the myasthenic manifestations. After a night's sleep the patient finds that his voice is stronger, and his



Fig. 3.

Fig. 4.

Fig. 3. Showing the fullest protrusion of the tongue, and lagophthalmus.

Fig. 4. Showing the maximum effort to pucker the lips and blow. The left upper lid droops slightly.

rectum are not concerned. A few cases have shown renal conditions, as occurred in Case 2, and as Bookman also reports. His case showed a high blood-pressure; and Case 3 presents the same condition, but this is unusual.

Oppenheim states that young subjects are more commonly afflicted, but it will be noted that the three cases embodied in this paper were beyond middle life. There is no true degenerative atrophy or electrical reaction; but there is quick faradic fatigue, the characteristic myasthenic response. The reflexes are variable, and never show qualitative change. They may be normal, as in Case 1; overactive, as in Case 2; or sluggish, as in Case 3.

The progress may be rather rapid, showing only brief and slight halts or remissions, with sharp accentuation on slight exertion and a fatal outcome within a year, as occurred in Case 2.

CASE 2.—Mrs. J. McG., aged 63 years, married; housewife; came under observation October 23, 1916. Referred by Drs. Heimark and Simison, Hawley, Minn.

Family history shows nothing notable. Personal health, good. Has been married forty-three years; no pregnancies. Had no trouble at climacteric. Last winter had "neuritic" pain in the left leg, mostly lower leg; and there would be swelling in it when on her feet. This condition cleared up after several weeks. In May she began to have drooping of the right lid, pain in the back of the neck, and a nervous feeling in the stomach. There was a great deal of gas on the stomach. For a time she had difficulty with sleep. The bowels are regular at times, and at times are constipated. She has lost about twenty pounds, but is gaining a little now. Has been having some nervous cough of late. Thinks vision is good. Has not noticed any drooping of the lid recently. When the right lid drooped, the left eye was divergent. She worried about herself, and was depressed.

Patient is in fair nutrition, rather pale, pupils very small and about equal. No reaction to light or accommodation. Iris looks tense. Slight drooping of the right lid. On looking toward the right the left eye does not move with the right, and there is an irregular jerking of the globe; but she says she does not see double. Arm reflexes, negative. Patellar response, active and equal. No qualitative changes. Slight inco-ordination in arms, and slight ataxia. Pulse, 100. Blood-pressure: 140 systolic, 105 diastolic. Heart-sounds, normal. Lungs and abdominal viscera, negative. Urine, 1,015. Albumin, considerable zone, occasional granular casts.

Aside from the renal lesion, no positive diagnosis was made at this time.

The patient was seen again on December 20, 1916. Reports feeling weaker, and, although taking much rest, feels more restless. Speech has been quite indistinct at times, and she finds she must support her chin on her hand to keep it up when she is tired.

There is more pallor, and she looks thinner. The right lid droops more, and there is more divergence of the left globe. Cannot fully close her eyes. Muscular power in all facial muscles, decidedly reduced, especially those of mastication. She puts her hand under her chin, and pushes the jaw up. Is hyperesthetic to all reflex tests; and the reflex responses are somewhat overactive. Grip, very weak and equal. Strength in arms and legs, fair. Tongue movements, quite free. No tremor; no fibrillation; no muscular wasting; no reaction of degeneration. Characteristic myasthenic electrical reaction. Movement of soft palate, diminished. In drinking water takes only a sip, with considerable effort; the larger the amount of water, the greater the effort required to swallow. No disturbances of sensation. Upward movement of eyeballs, limited. Marked prominence of upper portion of sternum. Wassermann (blood) negative. Hemoglobin, 80; white cells, 10,400.

February 1, 1917, Dr. Heimark reports marked improvement in all conditions, apparently from long-continued rest in bed. Eyes now kept well open all day. Chews and swallows well. Speech, normal. Is depressed in spirits at times. Recently had double sciatic pain with edema in legs.

April 25, Dr. Heimark reports that, following effort to do some sewing and reading, the patient suddenly became worse after a period of apparently almost com-

plete freedom from the myasthenic symptoms. Had attacks of choking on attempting to swallow food. Could not talk or swallow for several days before death, which occurred from paralysis of respiration on April 5.

Others, and perhaps a majority, have been of moderate slowness with distinct halts or decided improvement, but probably always with return and increase of the manifestations and death in the third year, this being the course in Case 1, as well as in Bookman and Oppenheim's cases.

Goldflam's statement that the case reaches full development in a few weeks or months is not correct, for there are some in which an initial symptom-like dysphagia or dysarthria appears, and continues for an indefinite time before other manifestations develop. Such a case may be very chronic, from time to time showing minor weakness in the extremities, or moderate involvement in the ocular muscles, as in Case 3, which has now been in progress for five years.

CASE 3.—Mrs. Annie A., aged 55 years; housewife. Jewish; came under observation July 20, 1917. Referred by Dr. J. A. Watson. (Fig. 1.)

There is nothing notable in the family history.

Patient's health was good in earlier life; passed the climacteric at about thirty-five years of age; has never been well since. She has been growing gradually more nervous, dizzy much of the time, and some headache and feeling of weight or fullness in the head.

About five years ago she suddenly had difficulty in swallowing and speaking; and this trouble has continued more or less ever since, being decidedly better at times, and then suddenly worse again. Strength in speaking, chewing, and swallowing is distinctly better in the morning. At times she has trouble in closing the eyes, none in movements of the eyeballs, but has had some double vision, and has difficulty in holding up her head. At times she has trouble holding the mouth shut, and has to prop up the chin with her hands. Says the expression of her face has changed, become dull and board-like. The legs tire easily, too, and at times she cannot step up one or two steps; at other times she can do it quite easily. Sometimes she has difficulty in breathing, and there is a feeling of weight on the chest. There is slight difficulty in control of the urine. The bowel has been constipated for years. Sleep is poor.

She is poorly nourished; her color is leaden, but not pigmented. Expression of the face is heavy. Muscles of the face are flabby, and she has a somewhat emaciated look. No atrophy of lips; no fibrillation. Cannot completely close her eyes. (Fig. 2.) No ptosis, but she cannot raise lids beyond ordinary opening. (Fig. 1.) Very slight power to elevate or corrugate brows. No ophthalmoplegia. No nystagmus, but there is a somewhat wandering movement of the globes. Occasional irritable muscular spasm in face muscles. Many devitalized teeth. Tongue deflects slightly to right (Fig. 3); and the right half of the tongue looks a little flabby. Movements of tongue, quite free. Can close jaws and lips, but with little power. Has but slight puckering power in the lips. (Fig. 4.) Palate moves only slightly; voice is weak and husky, with distinct difficulty in articulation. Slight difficulty in swallowing. There is a Darwinian

tubercle on each ear. The arm, leg and neck muscles are all weak on resistance tests. Grip, weak. All tendon reflexes, sluggish. No qualitative changes. Marked difficulty in stepping up. Some swaying with eyes closed. Faradic excitability is reduced, and shows the myasthenic reaction. No reaction of degeneration. Pulse, 100; blood-pressure: 170 systolic; 155 diastolic (radial). Heart-sounds, clear. Skiagraphs of teeth show no apical abscesses. Wassermann (blood), negative. Urine, negative.

Skiagraph of chest by Dr. C. A. Donaldson showed nothing definite.

The appearance presented by a case of this mysterious disease is profoundly impressive. The drooping and yet unclosing lids, the woeful expression, the flat and labored speech, the effort in swallowing, the propping movement of the hand beneath the chin, and perhaps weak, wavering and clumsy locomotion, present a grouping distinctly unlike anything else in disease entities. The nearest approach is true bulbar paralysis, and in an occasional very chronic case, like Case 3, the differentiation may be difficult, but in bulbar paralysis there is fibrillation, trophic atrophy, and reaction of degeneration. Policephalitis also presents atrophy, degenerative reaction, and no remissions. Hysteria does not present a consistent bulbar group, and the myasthenic reaction is not found.

The outlook is very grave. Goldflam asserts that recovery may take place, but extended remissions may simulate recovery; and whether permanent disappearance of all symptoms ever occurs is very doubtful. Certainly at least two-thirds of all cases are fatal in time. It may be a matter of a few months, as occurred in Case 2, or may extend over a period of years, as illustrated in Case 3, which now, after five years of time, presents only moderate manifestations.

True etiological factors being as yet practically undetermined, all our efforts in treatment must at present be symptomatic and theoretical. Studies in metabolism have shown nothing of material importance. The harmful effects of over-exertion and exposure forms our only clear datum. All material physical effort must be restricted; the patient must be kept much in bed; and there must be very little speaking.

Galvanic and faradic stimulation are contraindicated; the static bath or high frequency condensation cautiously employed may be of service.

Although Bookman found no value from pluri-glandular treatment in his case it still offers most at present in the direction of experimental medication. Stern's recommendation of complete

thymectomy and unilateral thyroidectomy is not justifiable as a general procedure, nor unless definite abnormality of the thymus is shown. Case 3, with the remarkable prominence of the upper portion of the sternum, would have been a fair one for this operation. The fact that Schumacher has observed marked improvement in the myasthenia of Graves' disease after thymectomy, has some significance. And further extensive studies in endocrine therapy are to be especially encouraged.

DISCUSSION

DR. W. A. JONES (Minneapolis): My interest in myasthenia gravis is that of the neurological observer.

These cases are not frequent, and are occasionally seen when least expected. The most characteristic thing about all of them is the periods of remission. You may see the patient at the examination; and two or three months later all the symptoms will have disappeared, only to recur after a reasonably long interval.

The case which I reported at the meeting of the A. M. A. last year with full autopsy findings, illustrates this very clearly. The man had an attack in 1912 which lasted six months, and in which he went through all the characteristic symptoms of myasthenia; and he made a complete recovery so far as he knew, was able to work, and resumed his occupation as a carpenter, and was well until 1915, when the attack gradually returned, and he went through the usual definite symptoms which Dr. Crafts has so graphically described.

From that time on the observation of the case showed the other characteristic symptoms,—that of ocular involvement and of extreme muscular fatigue. Nothing was found by examination of any sort, to give us a suggestion as to the cause, except that in the early attack he was exposed for long time to cold water and to bad weather, his attack immediately following.

I assume that under such exposure a blockade of some of his endocrine glands took place; and, if the glands were at fault, his symptoms marked the beginning of the myasthenic condition.

The term is defined as one of polio-encephalomyelitis, which really covers the entire field practically in neurological medicine.

In the 56 cases reported, which came to necropsy and have been recorded in the Philippines since 1901, 17 showed hyperplasia or persistence of the thymus, and 10 out of the 56 cases showed a thymic tumor similar to my case.

These people died, then, from an involvement of the thymus or the thyroid, and their death was a thymic death. Sometimes they are confused with status lymphaticus, but the whole thing can be summed up in the condition known as thymicus lymphaticus, involving, not only the gland, but the lymphatic structures, besides.

In most of these patients the muscles and the lymph-channels in the muscles are involved to such a degree that it is quite evident, under the microscope, that such a condition existed in my case.

There is nothing really to do for the patient. They are interesting cases to watch and observe; but we are totally helpless as to their treatment; and their recovery, if there is recovery, is only transitory.

CHAIRMAN RIGGS: We are very fortunate in having with us at this session Dr. Archibald Church of Chicago. I know we shall all be very glad to hear Dr. Church say something upon this subject.

DR. ARCHIBALD CHURCH (Chicago): This condition, in spite of the statement of Dr. Jones, I think is a rare one. I can recall quite definitely pretty nearly all of the cases—and there are not many—that I have seen in thirty years.

The general impression which I draw from my personal experience—and, of course, personal experience is necessarily limited, is not of the utmost value, and is no basis for generalizations—is that perhaps myasthenia gravis is not a disease entity.

I recall a case which may illustrate this point of view. A young man about fifteen years ago applied to me for help, and showed the characteristic manifestations of myasthenia gravis, including the easy fatigue of the deep reflexes, the myasthenic reactions to electricity, and the weakness of the eye apparatus and of the throat and lips. He went along for a number of years with fluctuating manifestations, being able to retain a position of considerable importance in one of the big mail-order houses.

He subsequently went to Philadelphia, and saw Weir Mitchell, who wrote me that it was the second case he had ever seen, and that he was greatly interested in having found, somewhere in the scapular region, a peculiar electrical reaction in the muscles, which he said he had found in his former case, and to which he attached some importance.

The patient then went on to Europe, and saw Oppenheim, who confirmed the diagnosis, and laid out a plan of treatment, which was followed for several years. Subsequently he developed a progressive muscular wasting, involving the shoulder girdle muscles, which was of great interest to me in view of the early finding of Dr. Mitchell in this region in this particular case, with all the importance which he had attached to that finding.

At the present time the man presents all the manifestations of a progressive myopathy plus a myasthenia gravis; and I find, upon reference to Levandowski, that this association of progressive myopathy with myasthenia gravis is not entirely rare; that perhaps six or eight cases have been placed on record.

Another case of association of myasthenia gravis with the general state occurred in a young woman who was phthisical; and in whom, before being sent to Colorado, the myasthenic condition was very definitely developed.

Under the improvement of her lungs, owing to her residence in a sanatorium near Denver, the myasthenic condition receded very notably, but never subsided entirely; and as the lungs grew worse her myasthenia grew worse. The myasthenia was not one of general weakness in association with phthisis, because it presented those characteristic reactions which are so significant.

Another case I recall—and my recollection of it was facilitated by Dr. Craft's first case—occurred in a man who would have attacks of what seemed to be periodical paralysis upon exposure. He was put down as a case of family periodical paralysis, because there were other members of his family who had presented things of the same sort; and eventually he developed into a definite case of myasthenia gravis.

In view of these cases and others, the intimate association of myasthenia gravis with other conditions may

perhaps prevent its being looked upon as an essential disease or entity. Today I think we are a little disposed to ascribe to the ductless glands very much all the shortcomings of the human organism, so that, while in many of these instances thymic cysts have been found and thymic tumors have been demonstrated, and a lymphatic condition of the muscles is not uncommon, there is nothing which is uniform.

The treatment, as has been said, is not one which covers the practitioner with glory, but there is one little point which I think might be important. In view of this great weakness the tendency is natural to turn to strychnia. Most motor weaknesses of the nervous system call for the administration of strychnia at somebody's hands sometime or other. In one of my cases I tried the use of strychnia by hypodermic administration two or three times a day, of one-thirtieth of a grain of strychnia, increasing it until I reached one-fifth of a grain at a dose. Under the increased dose of strychnia the myasthenia gravis increasingly grew worse, and each time when I withdrew the strychnia the patient improved, and each time—because I did it a number of times to satisfy myself that strychnia was the element—under the free administration of strychnia the disease apparently was made worse.

Following Oppenheim's suggestion in the case I have mentioned, spermin was used. Spermin is a derivative of one of the endocrine glands; and he seemed to attach a great deal of importance to its administration in this condition. In a number of patients, seven or eight, where I have used spermin, I have not been able to convince myself that it had any significant value.

I have tried the more recently developed arsenical preparations, the cacodylates and the arsenobenzol groups, with apparently some temporary benefit. We can understand the value of the arsenicals in toning up the hematopoietic apparatus; and this perhaps may have been the advantage derived in these cases by the free use of arsenic.

CHAIRMAN RIGGS: When this syndrome is well developed, the diagnosis is simple, but I saw a case about a year ago which had been seen repeatedly by some of the best clinicians of our state, and they had told the family that the trouble was an hysterical one, and they directed that the therapeutic measures usual in this neurosis should be used. When I saw the patient the myasthenic syndrome was so marked that the character of the trouble was clearly evident. Undoubtedly, when first seen, the patient was emotional, and the symptoms were of that indefinite type so frequently seen in hysteroneurasthenic conditions, and their real significance was overlooked.

DR. CRAFTS (closing): The hour is late, and the illuminating discussion which has taken place quite covers the ground. I cannot agree with the logic of Dr. Church's position. Complication with another disease does not argue against myasthenia as a true entity.

I might simply refer to a case which I have had, which had such mild manifestations as to make the diagnosis a question. All she had was an occasional drooping of the eyelid when she became particularly tired. She has been a teacher in the parochial schools. I have been watching her for some three or four years. She has not had any manifestations now for two or three years. On two occasions she has had marked drooping of the eyelids, and her appearance in looking out from under them is quite characteristic (illustrating).

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

W. A. JONES, M.D., EDITOR

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

DECEMBER 1, 1917

NOTICE TO MINNESOTA SUBSCRIBERS

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CONSERVATION OF FOOD BY PHYSICIANS

The suggestion that physicians may take a large part in the conservation of food does not imply that only physicians should conserve food, but it means that physicians may do much toward the conservation of food through their association with patients and their families. This has been brought out by Charles O'Brien, author of "Food Preparedness for the United States," in a New York paper. O'Brien hints to the doctor that vast savings can be made here by cutting down the rations of the individuals with a result beneficial to health and otherwise. We cannot, of course, on account of the vast expanse of the country, in any way ration our food supply as they do in Germany, but we can approach it at least by individual efforts as well as through papers bearing upon food values in our medical societies. It is quite pertinent to remark that, at

the average medical society, very little is said about the practical side of the treatment of the individual other than medical; and here is a golden opportunity for someone who understands food values and who knows something of the preparation and composition of food stuffs, to become a leader in food-conservation. For instance, it is conceded by Dr. M. Hindhede, of Copenhagen, one of the greatest nutrition authorities in the world, that the death-rate among German men before the war had risen to 18.2 a thousand per annum. He attributes this largely to the fact that, in the preceding fifty years, the Germans had become the champion meat-eaters. Dr. Hindhede believes that 10 per cent of proteids is sufficient, and he is a believer in fewer calories than the amount prescribed in the old standards. The death-rate in Berlin last fall had fallen to 12, and London has approached this figure by its method of rationing the people. The American Relief Commission in Belgium succeeded in reducing the rate to about 8; and it is asserted that many of the common diseases of civilization have been all but eliminated. In New York City before the war 14.5 was claimed as the world's record death-rate. In the number of deaths per thousand per annum the war has demonstrated, too, that a nation can live on a highly restricted diet, perhaps about one-half of what was formerly consumed, with a result of great benefit to the health of the individual.

In order to accomplish this result rationally, the people must be instructed, first, in the selection of foods, procuring those which have reasonably high food values and are capable of producing a definite number of calories. Next, they must be instructed in the preparation of food in the kitchen, and, particularly, in the saving of food products in their preparation. It is notoriously true that in the country towns, notably in hotels, no attention whatever is paid to the selection of food and its preparation or to the wasting of food, when a little effort or a little foresight would correct these three chief factors in conservation.

For instance, to show the comparison between certain foods, the white potato, one of medium size, which weighs 3.5 ounces, contains 2.2 of proteid, 0.1 of fat, and 18.4 of carbohydrates, and has a fuel value of 83 calories. Now, contrast this with a cup of shelled almonds, which weighs about 5.6 ounces and has a fuel value in calories of 1,035. One pound of beef marrow contains 3,828 calories and shows its fuel value.

Of course, a very small per cent of this is proteid, and a comparatively large per cent of it is fat. This shows that a cheap and easily procurable food may be of high caloric value. On the other hand, a pound of beefsteak, top of the round, has a food value of 652 calories. A loaf of white bread, weighing 12 ounces, produces 881 calories as its fuel value, while a loaf of gum-gluten bread, which weighs 13 ounces, contains 957.2 calories. A cup of butter, which weighs approximately 8 ounces, has a caloric value of 1,744. Again, one cup of corn-meal, weighing 5 ounces, has 504 calories. The same amount of corn-starch has 592 calories. One cup of thick cream, 40 per cent, is capable of producing 864 calories. A pound of fowl contains 1,015 calories, while one serving, approximately 5.5 ounces, contains 224 calories. Eggs, of course, have a small caloric value. An egg that weighs 1.5 ounces, is equivalent to 60 calories. Again, a cup of hominy contains 805 calories, while one serving of lamb-chops has a caloric value of 329. One cup of milk has a caloric value of 169. This means whole milk, while a quart of skimmed milk has a caloric value of 358. The man who sits down to a table and eats a pound of mutton chops gets 1,640 calories, and it is not unusual to see big eaters eat this enormous amount; and yet they have wasted time in its consumption, and they have gained virtually little. A cup of uncooked rice, which weighs approximately 8.5 ounces, has a caloric value of 795, while a cup of raisins, which weighs 4 ounces, has a caloric value of 352. It is well known that one pound of chocolate, which is served very freely to the armies, is equivalent to 2,772 calories. It contains a large proportion of fats, a fair proportion of proteids, and a moderate supply of carbohydrates, so that, as a sustaining food product, chocolate has been recognized for years as a practical and nutritious food. One cup of granulated sugar, which is almost wholly carbohydrates, is equal to 840 calories, and is, again, a sustaining and heat-producing food.

Of course, to go all over the subject of foods and to differentiate between the different kinds would require a study of a book on practical dietetics. The above facts are set forth simply that the attention of the consumer may be called to the necessity of so compounding foods as to obtain a reasonable and rational diet. The average man at light work, to sustain his energy, needs from 2,500 to 2,800 calories. The man at moderate work requires from 3,000 to 3,500, and the man at hard work from 4,000 to 5,000.

Women require less comparatively, children rather more, according to the age, and probably in larger proportions than do men and women. The aged man and aged woman get along comfortably on from 1,600 to 2,000 calories per day.

It behooves the doctor, then, to get a practical work on food values, and to study the relative importance of foods, that he may be able to advise as to the quantity required for the individual. If this could be done, and this seems almost utopian, the amount of food saved would be almost immeasurable, and, if it were freed from waste and properly prepared, the United States could feed the world.

The effect of tea and coffee varies in different individuals. Some people habitually consume enormous quantities of both. Not infrequently the doctor hears a patient say that he drinks from six to eight cups of coffee, or its equivalent in tea, each day. These people, of course, are frequently habituated to its use, and they seemingly acquire an immunity from the over-stimulating effects of both tea and coffee. It is well known that both of these increase the heart action, they are mildly stimulating, except in excessive amounts, and when taken in moderation they produce but little impression upon the circulatory system. It is conceded, however, that both coffee and tea, when taken with sugar or milk alone, are more healthful and cause less ill effects than when both sugar and milk are used. The substitutes for coffee, of which there are many on the market, lack the aromatic oil and caffeine, which are really the stimulation side of the coffee, but they make pleasing hot beverages and, served with sugar and cream, have a food value.

Gravies made of flour, fat, and water or milk have high caloric values. Consequently they may be served, as they frequently are among poorer classes, on all sorts of foods, and they sometimes contain the most caloric value of the dish set before the family. For instance, egg sauce made of 2.5 tablespoonfuls of butter, 1.5 tablespoonfuls of flour, .25 teaspoonful of salt, to which is added a little pepper, one-fourth of a cup of hot water, and two eggs, contains 434 calories. Wine jelly sufficient for six servings contains 1,530 calories, and is made of one-half box of shredded gelatine or two tablespoonfuls of granulated gelatine, with one cup of cold water, one and one-half cups of sugar, and two cups of boiling water, one cup of wine, and a speck of salt. In spite of this fact the nutritional value is not very high, and they are simply pleasing in flavor and are an agreeable addition to the diet of an invalid.

The question of cereals is a very important one, and their digestibility depends upon the mode of preparation and the thoroughness of insalivation. For the normally healthy person cereal foods are very wholesome. In general, about 90 per cent or more of the organic matter is assimilated. The carbohydrates are most completely digested; the protein shows a wide variation, but is less perfectly assimilated than the other nutrients, owing partly to the fact that it is often hardened in cooking and partly that it is intimately bound up with cellulose in the bran coats. For this reason white flour shows a higher degree of digestibility for protein than do whole-wheat preparations. Among the cereal breakfast foods rolled white or puffed wheat ranks first in digestibility. Rolled oats next and corn preparations among the lowest. Cereals have an actual digestive nutritional value, and they are cheap, as well as wholesome. For instance, one pound of flour furnishes 1,665 calories. The same with one pound of corn-meal, and approximately the same with one pound of hominy. These foods are always ready, and are very easily cooked if the housewife will use a little discretion and plenty of time in their preparation. This eliminates the purchase of boxed foods, package foods supposedly already prepared, but certainly not as good in food values as those prepared in the home. Puffed wheat and puffed rice, which are now on the market, are cooked at a very high temperature, the starches are converted, and the food is practically ready for assimilation. They need simply a little heating, and with the addition of cream and a little salt, they make a desirable breakfast upon which the individual could live with practically no other foods.

Again, the practical thing to which we desire to call the attention of our readers, is the *selection* of foods, the *preparation* of foods, and the *elimination* of waste. A proper combination of foods, even though the quantity be relatively small, is a much higher value than indiscriminate feeding upon all sorts of made-up dishes containing a variety of food values.

CHECKING UP BIRTH-REGISTRATION IN MINNESOTA

In a recent check-up of a Minnesota city of about ten thousand people, thirty-one unreported births were discovered in three days. This was followed by the filing of complaints against six physicians. A like investigation in a town of six

hundred brought to light half a dozen unreported births, and both of the physicians in the latter town were found to be delinquent. In another town eleven unreported births were discovered.

Thus, it appears that the State Board of Health in attempting to check up unreported births and to enforce the provision of the law in this matter, is finding plenty of material to work on. However, it is reassuring to find that in another entire county recently checked only two unreported births were discovered for the period checked. One of these cases had not been attended by a physician at all, and in the other case the physician had come from a near-by town across the state line.

Physicians should bear in mind that they have not complied with the law in reporting births by leaving a signed blank with the parents, depending upon them to fill it out and send it to the registrar.

The law plainly puts the responsibility up to the attending physician to fill out a complete report *and send it direct within ten days to the local registrar of the district where the birth occurs*. Local registrars are made up of health officers in cities, recorders in villages, and town clerks in townships.

The State Board of Health has taken the position that, irrespective of its friendliness to any particular physician, or his friendliness to the Board, or his competence as a medical man, where it discovers a violation of the law in this important matter, the unpleasant duty of prosecuting the culprit will not be evaded.

DRASTIC MEANS FOR CONTROL OF VENEREAL DISEASE UNDER WAY BY THE MINNESOTA STATE BOARD OF HEALTH AND THE UNIVERSITY AU- THORITIES

The State Board of Health held a conference with prominent St. Paul and Minneapolis physicians last month for the consideration of regulations for the control of venereal disease. The social hygiene problem has been receiving much attention during the past few weeks from representatives of the University Medical School, the Minnesota Public Safety Commission, the Minnesota State Board of Health, and numerous social workers of the Twin Cities.

It was the sense of the meeting that all cases of venereal disease should be reported to the State Board of Health by means of an identifica-

tion number, and, furthermore, that such cases as discontinue treatment while in an infectious condition should be reported by name in order that necessary action can be taken to prevent the spread of infection.

The meeting also expressed the opinion that the Board should undertake to offer free diagnostic service to private practitioners and to institutions, together with free salvarsan when possible.

The discussion also brought out the opinion that the public should be given proper instruction concerning the dangers of venereal disease.

MISCELLANY

RED CROSS CHRISTMAS SEALS

Because of the tremendous needs this year the American Red Cross is urging a largely increased sale of Red Cross Christmas Seals. The sale of the seals was started by the American Red Cross about ten years ago, and is still a function of that organization. The actual sale of the Seals, however, is delegated to the National Association for the Study and Prevention of Tuberculosis and, through them, to state and local organizations.

Mr. H. D. Gibson, General Manager of the American Red Cross, in a letter to all the Division Managers, states: "The tuberculosis problem generally is intensified by the war; the experience of foreign countries, especially in France, indicates increased danger from this disease, not only to soldiers, but to the civilian population." Mr. Gibson closes with an appeal in behalf of the Red Cross Christmas Seals for the welfare of the United States as a whole and for the winning of the war.

That this need is a most urgent one is seen from the following facts: Dr. Hermann Biggs, Health Commissioner of New York State, after an investigation in France, reports that 500,000 of the civilian population and 150,000 soldiers from the front have already broken down with tuberculosis. In Havre, the death-rate is about four times what it is per capita in a city the size of Minneapolis or St. Paul. Physicians returning from Germany and the other warring countries relate that the problem has been very much intensified. In Berlin alone the death-rate is more than double, and a similar situation exists in Belgium and in the parts of France in possession of Germany.

Whether or not the United States faces a similar situation depends partly on the increased ef-

fort to guard the boys going to the front against this disease, and to protect those who stay at home.

The Red Cross Christmas Seal has been the one agency which has financed this campaign, and which has helped to make this prevention possible. Since the sale was started by the American Red Cross, in Delaware, about four million dollars' worth of Seals have been sold in the United States. This year the Red Cross is anxious to increase the sale threefold.

The question naturally arises as to how specifically this vast sum will be spent. In the first place it will provide for an increased educational and propaganda campaign spreading broadcast the slogan of good health and the triumvirate of rest, good food, and fresh air. In addition it will make possible more beds for those actually sick, thus safeguarding the community against further infection, and giving the humanitarian treatment for the individual himself. It will carry into the public schools the program for fresh-air classrooms and a chance for every child. It will make possible evening dispensaries for working people, medical examination for employes, health insurance, early diagnosis, and a host of other allied benefits. Of course, whether or not all these things are accomplished will depend upon the amount of money received from the sale of Seals.

Five seals per capita have been set as a mark for any community to be placed upon the honor-roll. Will your community be beyond this roll, or will it be among the slackers? What will be your share in the contribution toward this campaign?

RESOLUTION ADOPTED UNANIMOUSLY BY THE CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA AT CHICAGO, OCTOBER 25, 1917

WHEREAS, The experiences of the nation convince us of the necessity for Universal Military Training, to furnish qualified men for defense, to strengthen manhood and mental poise, and to make for a more efficient citizenship, and

WHEREAS, We believe it will democratize youth and furnish discipline, while developing physical force and endurance, and will produce better fathers and workers for the ranks of peace, therefore be it—

RESOLVED, That the Clinical Congress of Surgeons at its eighth annual meeting urges upon Congress at its coming session the passage of a

measure along the general lines of the Chamberlain Bill for Universal Military Training, and that the cantonments now used by the National Army be utilized, if possible, for such work.

THE DEATH-RATE IN THE WORLD WAR

In the Charge of the Light Brigade 113 were killed and 134 wounded out of 673, or 36.7 per cent. In our Civil War, the Ninth Illinois lost at Shiloh 63.3 per cent; the First Minnesota at Gettysburg, 82 per cent; and the Sixty-ninth New York, 1,000 out of 1,200 in twenty minutes or 83.3 per cent.

The Third Westphalian regiment, Prussians, at Mars la Tour, in 1871, lost 1,484 out of 3,000, or 49.4 per cent.

In the present war, the splendid Canadians left 600 out of 800 on the field, in consequence of an unrescinded order.

Sir Charles Ross' statement of the *casualties* at the recent battle of Messines is as follows:

Total number of men engaged, 280,000.

Total casualties, less than 9 per cent.

Total fatalities, less than 1 in 7 of the total casualties.

Reported from the same source of another recent battle:

Engaged:

First line 250,000

Second line 250,000

Casualties:

Walking 6,000

Stretcher 2,600

Killed and wholly disabled..... 1,400

The percentage of casualties in the entire French army in proportion to mobilized strength is as follows:

Battles of Charleroi and of the Marne... 5.41

First six months of 1915..... 2.39

Second six months of 1915..... 1.68

First six months of 1916..... 1.47

Second six months of 1916..... 1.28

Military authorities in this country agree that the killed in action and dying of wounds have never at any time in this war exceeded 20 per cent of the total casualties. This would give in the battles of Charleroi and of the Marne 108.2 fatalities in every 10,000 mobilized strength, or practically eleven men killed in action or died of wounds for every 1,000 with the colors.—*North American Review*.

The above death-rate of troops in action in these two battles is about the same as that of the Twin Cities, while the death-rate of the French army in the second six months of 1916 is much lower than the death-rate of any part of Minnesota.

NEWS ITEMS

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Dr. R. R. Fisk of Brookings, S. D., has left for the war.

Dr. Alf. Oftedal has moved from Hendrum to Moorhead.

Dr. A. A. Pesonen has moved from Virginia to Duluth.

Dr. A. W. Drew has moved from Farmington to Swanville.

Dr. Joseph Moses, Jr., has moved from Adams to Northfield.

Dr. E. W. Goldman, of Madison, S. D., has left for the war.

Dr. N. Chagnon has moved from Fargo, N. D., to Dayton, Minn.

Dr. J. D. Fuller has moved from Tuttle, N. D., to Burlington, N. D.

The Owatonna City Hospital recently opened a home for its nurses.

Dr. J. S. Whitson has moved from Charlson, N. D., to Streeter, N. D.

Dr. B. E. Lord has moved from Glenburn, N. D., to Great Falls, Mont.

Dr. W. F. Maertz has moved from Lidgerwood, N. D., to New Prague, Minn.

Dr. F. M. Mahin has moved from Canova to Lake Preston, taking Dr. Allison's practice.

Major H. T. Kennedy, of Pierre, S. D., has been made chief surgeon of a brigade at Denning, N. M.

Dr. T. G. Clement, of Vernon Center, has sold his practice to Dr. B. M. Howland, of Melbourne, Iowa.

Dr. Olef A. Kvello, of Cokato, was married last month to Miss Alice Evelyn Senn, of Randolph.

Dr. C. M. Roan, of Minneapolis, spent the month of November at the New Orleans Polyclinic.

Dr. H. B. Zimmerman, of St. Paul, first lieutenant in the Medical Corps, has been promoted to be a captain.

Dr. Theo. S. Paulson, of Tyler, is taking a special course in the Chicago Eye, Ear, Nose and Throat College.

St. Paul physicians and hospital men will endeavor to standardize the hospitals of the city along certain lines.

Dr. N. K. Hopkins, of Arlington, S. D., has returned from Chicago, where he has been taking postgraduate work.

Dr. I. George Wilttrout, of Swanville, has moved to Alexandria and become associated with Dr. A. D. Haskell.

Nine counties of Northern Wisconsin have given 40 doctors to the U. S. Medical Corps out of 135 in that section.

The Training-School of the Northwestern Hospital of Minneapolis graduated a class of nine nurses last week.

North Dakota stands sixth in the percentage of physicians and surgeons who have volunteered for service in the war.

The Maternity Hospital of Minneapolis graduated six nurses on November 1. Why so few when the need is so great?

Captain R. D. Campbell, of Grand Forks, is specializing in cranial surgery at Philadelphia, preparatory to active service.

Cokato opened its enlarged and remodeled hospital last month. It has 125 stockholders among the village and farm people.

Dr. B. S. Allison has moved from Lake Preston to Madison, S. D., and entered into partnership with Dr. H. E. Kellogg.

Dr. I. F. Selleseth, a recent graduate of the University of Minnesota, has taken the practice of Dr. L. L. Gibbon at Lowry.

The new Methodist Hospital building at Mitchell, S. D., will be dedicated on December 9th. The building will cost \$120,000.

Dr. A. O. Aaker, of Velva, N. D., is the author of an opera which the American Symphony Orchestra of Chicago played last month.

Dr. R. W. Johnson, of Iowa, will have charge of the practice of Dr. J. G. Abbott, of Hope, N. D., while the latter is in the army.

The *Army and Navy Journal* says Northwestern physicians are getting circulars offering a bogus salvarsan for sale at a low price.

Dr. P. C. Davison, of Willmar, opened his new hospital last month. It can accommodate twenty patients, in addition to a maternity ward.

Dr. Bernard Sorose has moved from Winger to Detroit, where he has entered into partnership with Dr. O. O. Larson, of the latter place.

Dr. A. H. Keller, of Sioux Falls, S. D., died last month at the age of 64. Dr. Keller had practiced in Sioux Falls over twenty-five years.

Dr. B. W. Jarvis, of Minneapolis, was married last month to Miss Ada Carter, of New York. Dr. Jarvis is associated with Dr. W. A. Jones.

The Ramsey County nurses have increased wages from \$25 to \$30 a week for ordinary cases, and to \$35 for contagious and obstetrical cases.

Major E. P. Quain, of Bismarck, started November 2, for Boston, where he will take special work in fractures, preparatory to active service in France.

Dr. E. J. Cooke, of Minneapolis, has been engaged as the physical director of St. Olaf College, St. Paul. He is a brother of Dr. Cooke of the University.

The traveling poliomyelitis clinic of the Minnesota State Board of Health had 1,051 cases before it during its trip over the state covering four months.

The prison sentence of Dr. M. A. Hatch, of Minneapolis, for an illegal operation causing the death of the patient, has been confirmed by the supreme court.

Dr. A. M. Treat has located at Blooming Prairie to practice until he is called into active service at the front. He formerly practiced in Pingree, N. D.

Dr. E. J. Engstad, of Grand Forks, N. D., is in New York to carry out a plan for sending every American soldier in Europe a picture of his home and his family.

The Nurses' Alumnae Association of the Swedish Hospital of Minneapolis subscribed for Liberty bonds by appropriating \$200 from the Association's treasury.

Dr. Charles H. Pierce has sold his practice and hospital at Menahga to Dr. R. H. Sweetman, of Green Bay, Wis. Dr. Pierce goes to the State Sanatorium at Walker.

Dr. Otto E. Aving, of Iron Mountain, Mich., has located in Virginia. He will conduct a hospital in his new location, having been engaged in hospital work in Michigan.

The following names should be added to the list of North Dakota physicians in the Medical Reserve Corps: Dr. W. L. Long, Dickinson; and Dr. Jamieson, Devils Lake.

Dr. J. H. Sandberg, formerly of Minneapolis, died last month at Pequot at the age of 71. Dr. Sandberg was a well-known botanist, and had been in the employ of the Government in botanical surveys.

George E. Richardson, instructor in bacteriology, in the School of Medicine, of the University of North Dakota, was called for service in the National Army, October 29, and has left for Camp Dodge.

Dr. Donald E. Baxter, formerly assistant superintendent of the Minneapolis City Hospital, has gone to France to take charge of the construction of children's hospitals.

The Swedish Hospital of Minneapolis requires a thesis from each of its internes during his period of service to be presented at one of the scientific meetings of the hospital staff.

The second unit of the Hennepin County Tuberculosis Sanatorium at Glen Lake, near Minneapolis, was opened last month. It increases the capacity of the institution from 60 to 100 beds.

The work of the class in naval hospital work done by the Dunwoody Institute of Minneapolis in co-operation with the University Medical School, has been highly praised by United States visiting surgeons.

The Range Medical Society met at Eveleth last month, when the subject of increasing fees was considered. Dr. C. W. More was elected president, and Dr. W. M. Empie, of Virginia, was chosen secretary.

The Medical School of the University of Minnesota has appointed Miss Edith Barber of the hospital's training staff to encourage young women in the Northwest to qualify for Red Cross work, at home or abroad.

On October 29, the Navy Hospital Corps Training-School of the University of Minnesota was formally opened. The staff is from the University Medical School. One hundred hospital corpsmen are under instruction.

Dr. Hugh S. Willson, of Minneapolis, has accepted a captain's commission in the M. R. C. and has been assigned as gastro-enterologist to the base hospital at Camp Kearney, near San Diego, where he reported November 20.

Dr. Guilford, health commissioner of Minneapolis, was recently called upon to prove that a drafted man under arrest in Montana, was of age. In the absence of proper birth-registration, this evidence would have been wanting.

At the November meeting of the Grand Forks (N. D.) District Medical Society, Drs. Theodor Bratrud, W. H. Witherstine, and Thos. Mulligan gave a detailed report of the recent meeting of the Clinical College of Surgeons held in Chicago.

The Department of Agriculture at Washington has sent out a warning against the "United States Medical Dispensary" or "Dr. Henry Post" advertising guaranteed "cures" for various ailments. Their field seems to be Minnesota and the Dakotas.

The North Dakota State Board of Health has suspended its compulsory order of vaccination of school children on the ground much antitoxin serum is mixed with a dangerous poison. Dr. McGurran, secretary of the Board, ascertained this fact at a meeting of physicians in Chicago.

The Lake Preston (S. D.) District Society met at Lake Preston last month. Papers by Dr. D. L. Scanlon on "Prostatectomy"; by Dr. N. K. Hopkins on "Tuberculosis of the Genito-urinary Tract"; by Dr. J. G. Long on "Infections of the Genito-urinary Tract"; and Dr. B. T. Green delivered the president's address.

Word received from the Surgeon General of the U. S. Army, conveys the information to officers of the Medical Reserve Corps of the United States Army, inactive list, that assignment to active duty may be delayed, and that they are advised to continue their civilian activities, pending receipt of orders. They will be given at least fifteen days' notice when services are required.

Dr. W. H. Condit, of the Medical School Faculty and University Hospital Staff, read a paper on "Eclampsia" before the Chicago Medical Society at the November meeting with Professor Thomas Cullen of Johns Hopkins University. At the annual meeting and convocation of the American College of Surgeons, held in Chicago on November 27, Dr. Condit was made a member.

The physicians of Washington County met in Stillwater last month, and reorganized the Washington County Medical Society with the following officers: President, Dr. W. R. Humphrey; vice-president, Dr. C. A. Newman; second vice-president, Dr. B. J. Merrill; secretary-treasurer, Dr. F. G. Landeen, all of Stillwater. Dr. Newman was also elected delegate to the State Association.

The Soo Surgical Association held its annual meeting in Chicago, on October 22 and 23, under the presidency of Dr. John M. Dodson, Chicago. The following officers were elected: President, Dr. George M. Steele, Oshkosh, Wis.; vice-president, Dr. David C. Pierpont, Ironwood, Mich.; secretary-treasurer, Dr. John H. Rishmiller, Minneapolis. The next annual meeting will be held in Minneapolis.

To assist communities in making their milk supply safe, the United States Department of Agriculture has issued a "Guide for Formulating a Milk Ordinance." This document, Department Bulletin 585, suggests a form of ordinance designed to protect the community against fraud

and disease and to insure cleanliness in the production and handling of milk. Health officers and physicians interested in improving milk supplies may obtain it free on application to the department.

Governor Burnquist has appointed the following physicians on the Minnesota Social Hygiene Commission, which is composed of fifty-two members: On the Bureau for Disease Control Dr. R. O. Beard, Dr. E. T. Bell, Dr. A. J. Chesley, Dr. W. A. Jones, Dr. L. G. Rowntree, Minneapolis; Dr. H. M. Bracken, Dr. C. D. Freeman, St. Paul; Dr. E. L. Tuohy, Duluth; Dr. Charles H. Mayo, Rochester; on the Committee on Education Dr. H. W. Cook, Dr. Frank Nelson, Dr. Mabel Ulrich, Dr. S. E. Sweitzer, Minneapolis; on the Committee on Social Service Dr. Carol Aronovici, St. Paul.

The following physicians of the Northwest received commissions in the Medical Reserve Corps in October and November: Captains—Angus W. Morrison, Arthur L. Cloudan, Charles A. Reed, H. A. Morris, of Minneapolis; E. A. Myerding, John C. Harding, and Joseph M. A. Gravelle, of St. Paul; B. E. Nickerson, Mandan, N. D.; William E. Harrington, Owatonna, Minn.; R. D. Hussey, Rochester, Minn.; Paul F. Rice, Solon, N. D.; Oliver Stewart, Bricelyn, Minn.; First lieutenants—John T. Ruse, Lakefield, Minn.; Ronald L. Lancy, Browns Valley, Minn.; Hiram J. Lloyd, Mankato, Minn.; David Lindbery, Fergus Falls, Minn.; C. V. Jamison, Devils Lake, N. D.; Fred F. Kenne, Wessington Springs, S. D.; Jean B. Clair, Winsted, Minn.; Frederick A. Engstrom, Mills, Minn.; James A. Weed, Yankton, S. D.; Edward T. Anderson, Platte, S. D.; Wayne W. Bissell, Rochester, Minn.; Thomas E. Jones, Sioux Falls, S. D.; Dan V. Moore, Yankton, S. D.; Thomas W. Moffitt, Deadwood, S. D.; Burt A. Dyar, DeSmet, S. D.; Joseph H. Plant, Montpelier, N. D.; Frank A. Plum, Rochester, Minn.; and Bernard J. Gallaher, Rochester, Minn.; Sam Zeigler, St. Paul; Parker Lloyd, Brainerd; Lloyd H. Van Slyke, Benson; Cleon J. Kenezkow, Minneiska; George A. Holm, Duluth; Reuben A. Johnson, Minneapolis; Richard O. Leavenworth, Glencoe; George E. McCann, Nevis; Kingsley Renshaw, Minneapolis; Clayton K. Williams, St. Paul; Arthur B. Williams, Wilnot; Leon A. Williams, Slayton; Paul Wipperman, Minneapolis; Albert J. Wentworth, Mankato; Gordon G. St. Clair, Section Thirty, Minn.; Verne S. Cabot, Minneapolis, F. S. Warren, Faribault.

The Southwestern Minnesota Medical Society had a very interesting meeting at Windom on November 8. Papers were read by Drs. H. B. Sweetser, Max Seham, and R. E. Farr, of Minneapolis; Dr. G. G. Cottam, of Sioux Falls, S. D.; Dr. A. J. Long, of Mankato; and Dr. B. Ravin, of Windom. A letter on army life from the former Secretary, Lieut. Emil King, was read, and was most instructive. The following officers were elected for the ensuing year: President, Dr. Wm. A. Piper, Mountain Lake; vice-president, Dr. John H. Leebens, Lismore; secretary and treasurer, Dr. F. G. Watson, Rushmore. The next meeting will be held in Pipestone on the second Thursday in May.

PHYSICIANS LICENSED AT THE OCTOBER (1917) EXAMINATION TO PRACTICE IN MINNESOTA

UPON EXAMINATION

Anderson, James K. Johns Hopkins, 1917
 Blake, Francis G. Harvard, 1913
 Blanco, Pio. Johns Hopkins, 1916
 Blanchard, Irene M. Johns Hopkins, 1917
 Craig, Clair C. Indiana University, 1917
 Connor, Charles E. Johns Hopkins, 1914
 Cross, Irving J. U. of Michigan, 1904
 Grempler, Walter E. Johns Hopkins, 1916
 Oerting, Harry Harvard, 1917
 Sargeant, Howard L. U. of Minnesota, 1918
 Sweetman, Richard H. P. & S., Chicago, 1896

BY RECIPROCITY

Burke, William St. Louis U., 1915
 Lerch, Charles A.
 Coll. of Med. & Surg., Cincinnati, 1877
 McGehee, Edward C. Tullane U., 1910
 Odell, Lester E. Hahnemann, Chicago, 1906
 Patterson, William E. P. & S., Illinois, 1900
 Von der Weyer, William. Marquette, 1915
 Whalen, George E. Marquette, 1915
 White, Walter E. Northwestern, 1914

LOCATION DESIRED

A surgeon, Norwegian, of middle age, wishes to become associated with a general practitioner in Minneapolis. Address 606, care of this office.

LOCATION WANTED

In North Dakota or Minnesota. Must have good schools. Practice should average \$4,000 to \$5,000 collectible. Address 602, care of this office.

LOCUM TENENS WANTED

A number of physicians are desirous of obtaining places as assistants or locum tenens for periods of one to three months. Address 603, care of this office.

POSITION WANTED

Position in doctor's office by graduate nurse who can also do stenographic work. References. Lucy E. Halbert, R. N., 4939 Girard Ave. So., Minneapolis, Minn. N. W. Colfax 5198.

PRACTICE FOR SALE

Good practice in live town of 1,200 near Twin Cities. Every modern convenience. Good country. Collections A-1. Good office equipment cheap. Real estate optional. Address 605, care of this office.

OFFICE POSITION WANTED

Two positions wanted in doctors' offices. One stenographer with several years' experience and one experienced in general office work, some experience in typing and bookkeeping. Address 604, care of this office.

LOCUM TENENS WANTED

A young doctor to take my practice for four weeks in a country town about 40 miles from the Twin Cities. Scandinavian or German preferred. Address 594, care of this office.

OFFICE POSITIONS WANTED

Several young women without experience in that line of work desire positions in physicians' offices. One of the applicants can speak French and German. Address 598, care of this office.

NURSE WANTS OFFICE POSITION

A registered nurse with five years' experience and excellent references, wishes a position as assistant in a doctor's office. Enquire of Della G. Drips, 703 Delaware St. S. E. Phone, East 5169.

EQUIPMENT FOR SALE AT A BARGAIN

A Scheidel-Western 16-inch coil with three-point mercury interruptor and high-frequency resonator; one new x-ray tube; full set high frequency electrodes. All in first class condition. Operates on 110 D. C. only. Address 608, care of this office.

OFFICE FOR RENT IN MINNEAPOLIS

I have been called into active service, and will therefore sub-let my office in the Physicians and Surgeons Building. I have a small private office with an interest in the reception-room held in common with a specialist. Address 607, care of this office.

SCHEIDEL INDUCTION COIL FOR SALE AT BARGAIN

Electrolytic and mercury interrupters, 3 meters; 4XR tubes; compressor apparatus; Leucodescent lamp; wall plate; high-frequency apparatus; large number of H. F. tubes; office scales; hand centrifuge. Owner retiring from business. Address 596, care of this office.

PRACTICE FOR SALE

Unopposed \$4,500 (or better) practice in thriving town of 500; located in richest county of state; large territory (14, 16, 18 miles); good roads; collections, 98 per cent; railroad division; railroad appointment with pass; insurance appointments transferable; free office rent. Will sell for price of residence, \$2,800; \$1,000 down, balance on suitable terms. Reason for selling, specializing. Answer quickly. Address 593, care of this office.

PRACTICE FOR SALE

Unopposed \$4,500 practice in town 500 in North Dakota. Splendid opportunity for a Scandinavian physician. County thickly populated, and always good crops; territory large, good roads, and large fees. Price of office, equipment and practice, \$600; terms. Write for further particulars. Address 612, care of this office.

PRACTICE OFFERED

In modern town of 450. Southern Minnesota, free for rental of large office room, ground floor, furnace heated. Rental of house optional. Good equipment, including x-ray, offered without charge for use to responsible party. Unopposed practice running over \$5,000 in rich territory. Nothing to buy. Reason, Military Service. Address 601, care of this office.

PRACTICE FOR SALE

A \$6,000 unopposed general practice in Minnesota in a progressive town of 800 on railroad; fine farming district; all modern improvements; good schools, roads, and collections; three towns tributary. Man doing major surgery should double income; exceptionally fine office outfit, etc. All for \$1,500; half cash, balance, bankable note. Address 609, care of this office.

PRACTICE FOR SALE

A \$4,500 unopposed North Dakota practice in a thriving town of 500, large territory, good fees, collections 98 per cent. Railroad division appointment for same including 100 miles; eight insurance companies transferable. Practice and good office equipment for \$700. Terms if desired. Further information on request. Leaving to specialize. Address 611, care of this office.

OFFICE FOR RENT

Over ten per cent of the physicians of Minneapolis have been called to war. This has left many vacant offices, many of them in central locations, making an opportunity for physicians and dentists in outside locations to come to the center. The Pillsbury building, Sixth and Nicollet, is in the heart of Minneapolis, and offers some excellent space in single, double, or en suite.

PRACTICE FOR SALE

A practice paying over \$4,500; in a North Dakota town of 500 population, 99 per cent Scandinavians; railroad division point; railroad appointment with pass; good roads, and very large territory; free office over drug store; opposition very light. Practice goes with a very good home for \$2,800—\$1,000 down, balance on suitable terms. Going to specialize. Act at once as this notice may not appear again. Address 597, care of this office.

NEW ORLEANS POLYCLINIC

The Graduate School of Medicine of the Tulane University of Louisiana, thirty-first annual session, opened Sept. 24, 1917, and closes June 8, 1918. Physicians will find the Polyclinic an excellent means for posting themselves upon modern progress in all branches of medicine and surgery, including laboratory and cadaveric work. Special attention given to military matters this session. For further information address Charles Chassaignac, M. D., Dean, New Orleans Polyclinic, post-office drawer 770, New Orleans. Tulane also offers highest class education leading to degrees in medicine, pharmacy, dentistry, hygiene and tropical medicine.

PUBLISHER'S DEPARTMENT

SURGICAL TECHNIQUE

The Laboratory of Surgical Technique is doing a magnificent work, and the young, indeed, the old, surgeon who takes a course in it discovers possibilities in his work that surprise him.

The surgeon who has learned the best way to do even the simplest operation has gained something that will show itself in all his work.

The Laboratory of Surgical Technique, Jefferson Ave., Chicago, furnishes a course valuable to any surgeon.

PHYSICIANS' SCALES

Probably there is not one reader of this paper who is not interested in scales for the physician's office, and therefore we call special attention to the illustrated descriptive announcement of Messrs. Noyes Bros. & Cutler on another page, exhibiting several styles of scales, which are very attractive, as well as very accurate.

Scales now find a place, not only in physicians' offices, but in all hospitals and gymnasia, and in many bath-rooms. It is worth while to buy scales with care, and get the best.

JORDAN SULPHUR SPRINGS AND MUD BATH SANITARIUM

The sulphur mud bath treatment, as carried out at the above-named institution and under the same management for many years, treating people from all walks of life, has given conclusive evidence of its efficiency. Whether called curative or palliative, patients in a run-down condition, with a multitude of manifestations, get relief from these baths, and get it so quickly and so fully what it is becoming popular to take a few mud-baths when one is run-down from any cause.

The Jordan Sanitarium, under the management of Mr. J. J. Leonard, may well be called "The Home of the Sulphur Springs."

For any information desired, write the Sanatorium at Jordan, Minn.

THE BEEBE LABORATORIES

This well-known laboratory, located in St. Paul, and doing a national business, calls special attention to the excellence and dependability of its autogenous vaccines, gained by the most rigid observation of the four essential steps necessary to perfection in their preparation, namely, perfect isolation of organisms, accuracy of standardization, proper devitalization without excessive heat, and absolute sterility.

The Beebe Laboratories sell 12 vials of the vaccines for \$10; and their name carries an absolute guarantee of the excellence of their products and, also, that satisfaction with their work will follow the use of anything they do for a physician or of any product they manufacture.

THE FAIRVIEW HOSPITAL

The city hospital with a *fair* view of the face of nature and with freedom from the din of city activities, from that of a road-cart to that of a railroad, is fortunate indeed; and all of this the new, attractive, scien-

tifically equipped, and scientifically managed Fairview Hospital on the Mississippi river bank enjoys.

The modern hospital is a great institution, and its work of health-restoration is only a little in advance of its work of health-preservation. This latter work is accomplished in its largest measure in the obstetrical department, and Fairview is exceedingly well equipped in this line.

Fairview Hospital, located at Twenty-third avenue and Sixth street south, Minneapolis, is used by many of our best physicians and surgeons, and has attained large success in the short time it has been in operation.

"RHEUMATISM" AND ATOPHAN

Just as completely as Atophan has replaced colchicum in the treatment of gout, because of its greater efficiency and the absence of the cardiac depressant and intestinal irritant properties of the old-time drug, so are the salicylates rapidly being superseded by Atophan in the treatment of rheumatism.

Salicylates, whether inorganic or organic, are most decidedly cumulative, depressant, constipating, and, as the newer investigations show, renal irritants, while Atophan, with a much more pronounced analgesic and antiphlogistic action, is free from these drawbacks.

Without, therefore, waiting for careful diagnosis to establish the exact type of rheumatism, the prescribing of Atophan is always in order for the promptest and most reliable relief from pain and inflammation so far obtainable from any known drug.

A SPECIAL DECEMBER OFFER OF LEATHER BAGS

The Phoenix Leather Goods Co., of Chicago, makes some very attractive offers of physicians' leather bags in their advertisement on another page, the offer being good only for the current month (December).

A handsome bag is a joy indeed; and if it is made of high-grade material by high-grade, honest workmen, it comes near to being a joy forever.

The bags shown in the announcement show the style of their goods; and the Company's reputation, gained in this line of exclusive work for thirteen years, is ample guarantee that the stock and workmanship put into the bags are equal to the style.

This offer is a genuine one, and the physician who buys one of these bags will find a deal of pleasure and usefulness in it.

SIMTECH

Simtech is the name of a really valuable, though small, booklet issued by the McIntosh Battery & Optical Co., of Chicago. It is a simple Röntgen-Tesla-d'Arsonval technic that should be studied and understood by everyone using x-ray apparatus.

All of this booklet is interesting and instructive, and much of it has high scientific value, and it gives information of which too many operators are wholly ignorant.

It is in such form as this that much of the most scientific information is imparted. The McIntosh Company has apparatus for sale, and this booklet is a part of its commercial literature, but the Company knows that it is not profitable to attempt to influence men capable of doing scientific work in this line by either grossly exaggerated or false statements, and they do not resort to such modes of gaining business. The booklet is for free distribution, and it is well worth having.

POKEGAMA SANATORIUM FOR TUBERCULOSIS

As it becomes more and more apparent that tuberculosis can be arrested and, in many cases, practically cured, the necessity for sanatorium treatment becomes more urgent. Whatever may be said in favor of a change of climate for these patients, it must not be forgotten that many patients cannot safely leave such a bracing atmosphere as that of Minnesota, and not a few patients do much better when near home and friends than when they go to distant states.

These facts emphasize the value of such a home institution as the Pokegama Sanatorium in Pine County, Minnesota, where everything in comfort and treatment known to modern science, is supplied.

The medical profession of the Northwest should be thoroughly acquainted with this scientific and admirably conducted sanatorium, which is under the supervision of Dr. H. Longstreet Taylor, of St. Paul.

THE EITEL HOSPITAL

A business man of Minneapolis sent us the following appreciative account of his forced stay at the Eitel Hospital which is located around the corner from the point where he found the need of a hospital.

"I had an automobile accident sometime ago that necessitated a hospital trip, and on account of the careful treatment and services which were accorded me at the Eitel Hospital I feel that I want to say something about it through your valuable pages and herewith submit a few lines in reference to the accident.

"I was run down by a couple of automobiles that collided on Lyndale avenue and Grove street. Three others were also injured in the same accident, and we were taken immediately to the Eitel Hospital. I am back at my desk now after receiving treatment and care at the Eitel Hospital; and I want to recommend the Eitel Hospital as the right place to go when you are sick or hurt, as they certainly give you the right kind of care and attention at that institution, and plenty of it.

"Very truly,

"J. A. L. WALMAN,

"President of the Walman Optical Company."

CLINICAL DATA ON "DICHLORAMINE-T"

The Official Bulletin of the United States Government says that, when the general medical board and the states' activities committee of the medical section of the Council of National Defense met in Chicago last month in conjunction with the Clinical Congress of Surgeons of North America, Dr. Edwin Martin, Dr. E. K. Dunham, and Dr. W. E. Lee, all of Philadelphia, showed "how much could be done for clean wound healing by the new antiseptic, Dichloramine-T, which is being investigated under instructions from the Surgeon General's office."

Dr. W. E. Lee, of the Pennsylvania Hospital, reported 7,288 surgical cases in which "Dichloramine-T" was used with remarkable results. He also reported twelve hundred war wounds treated in France with "Dichloramine-T" with 99.5 per cent recoveries and no secondary hemorrhages.

Literature on "Dichloramine-T" may be obtained from the manufacturers of this product, The Abbott Laboratories, Chicago.

THE RECOVERY FROM LA GRIPPE

Since the first appearance upon our shores of that unwelcome infectious disease known as La Grippe, the medical journals have been filled with articles advocating different methods of treating the attack itself and its various complications. But little attention, however, has been paid to the important question of how to best treat the convalescent subject. Among all of the acute infections there is probably none that is as likely to leave the patient quite as thoroughly devitalized and generally prostrated, as does a sharp attack of La Grippe. For some reason the degree of prostration from grippal infection appears to be entirely out of proportion to the severity of the attack itself. This peculiarity renders it advisable and usually necessary to strengthen and support the general vitality of the patient during the period of convalescence. Complete rest, nourishing food, plenty of fresh air and stimulation according to indications are, of course, distinctly important measures. At the same time tonic hematinic medication should not be neglected. Probably the most generally acceptable and efficient general tonic and hemic reconstituent for such patients is Pepto-Mangan (Gude), a bland, non-irritant and promptly absorbable combination of the organic peptonates of iron and manganese. This efficient blood-builder and reconstructive does not disturb digestion nor induce constipation, and is readily taken by patients of all ages.

THE RESTORATION TO FAVOR OF CREOSOTE

Creosote has been employed by physicians with varying success for many years in the treatment of bronchitis, especially the bronchitis of pulmonary tuberculosis. Because of its disagreeable odor and taste, because it caused gastric irritation and distress, nausea and even vomiting, most clinicians were forced to abandon its use. For these reasons creosote is now rarely prescribed. It has fallen into disuse, even though it is admitted that it is possessed of therapeutic value.

A NEW CREOSOTE PRODUCT

Calcreose (a chemical combination of calcium and creosote, containing 50 per cent creosote) very largely overcomes the objections to creosote. Like creosote, Calcreose will allay cough, lessen expectoration, and lower the temperature. Like creosote, Calcreose improves digestion and nutrition through intestinal antiseptis and stimulation. Like creosote, Calcreose is a stimulating expectorant.

Calcreose is not a germicide, but it checks bacterial activity, checks putrefaction, lessens the production of toxins—hence reduces the toxemia always associated with the intestinal infections. Like creosote, Calcreose is possessed of all these good qualities but, unlike creosote, Calcreose is practically devoid of all objectionable features. In other words, Calcreose is an agreeable form of creosote medication, and when given in small doses at first, gradually raised to tolerance, it is free from any untoward effects.

As high as 120 grains of Calcreose has been given daily without digestive disturbance.

Unlike many creosote compounds, Calcreose is comparatively inexpensive. A thousand 4-grain tablets costs the physician or druggist only \$3.00.

Calcreose is made by The Maltbie Chemical Company, Newark, New Jersey, and is advertised elsewhere in this issue of the Journal.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

VOL. XXXVII

MINNEAPOLIS, DECEMBER 15, 1917

No. 24

JEJUNOSTOMY: ITS INDICATIONS AND METHODS*

By C. H. MAYO, M. D.

ROCHESTER, MINNESOTA

Jejunostomy is an operation which, fortunately, is rarely required, but, when indicated, it is to be classified among the life-saving, or, at least, the most important palliative, surgical procedures. The term "jejunostomy" is often applied when, in making an enterostomy to relieve obstruction, the small intestine is opened. "Enterostomy" would be the more correct term, as the opening is made in a distended loop of small intestine, very often regardless of whether it is jejunum or ileum. On the other hand, when enterostomy is made for purposes of nutrition the jejunum is chosen, and the opening is made in its first loop.

In cases of obstruction of the small bowel (the so-called *ileus*) following operation, enterostomy should be done as soon as the evening of the third day or on the fourth day following its inception. The fifth day may be too late. Such obstruction may occur directly after an abdominal operation or several days later following an apparently normal primary convalescence. Nearly all the cases seen are those which follow operation or are acute obstruction from some unknown cause, and when the enterostomy is made the patient is usually too seriously ill to warrant prolonged or extensive exploration.

Handley has suggested a jejunal colostomy in such cases. This is an extra procedure on very sick patients, and makes a permanent enterocolostomy, which is only occasionally neces-

sary, a temporary vent being sufficient. It is often difficult to determine whether a high or low opening is made in the bowel; and such a high communication with the colon would possibly develop later trouble.

When the operation is done as an enterostomy for obstruction, it is supplemented by rectal feeding of glucose and fluids. The stomach is also washed every six to eight hours until it is found clear. The operation is most effective when the obstruction is due to local peritonitis, in which case the local condition will persist for, approximately, a full week. When the obstruction is from diffuse peritonitis the operation is less effective, but well worth making, as, with the gastric lavage and drainage, some patients may be tided through the temporary period of parietic obstruction and relieved from the toxemia of retained and absorbed intestinal fluids.

Jejunostomy for purposes of nutrition would be indicated with widespread cancer of the stomach obstructing the cardia and leaving but little room in its contracted and cancer-involved wall for gastrostomy. Patients in this condition are half starved, there is often extreme exhaustion, and it may be impossible or inadvisable to make an extensive preliminary x-ray examination. Gastrostomy in such instances adds to the patient's pain; on the other hand, a jejunostomy will rest the stomach and give immediate relief. We have seen patients gain from ten to thirty pounds following jejunostomy; and with complete rest of the stomach the cancer made slower

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

progress. The operation is advisable in case of extensive laceration of a cancer of the stomach made accidentally during an exploratory examination. Mayo-Robson advises it also in linitis plastica and in extreme cases of vomiting of pregnancy. The operation is so easily and quickly done that we sometimes wonder it is not more commonly chosen in cases of nervous vomiting of girls of from eighteen to twenty-five years of age, instead of the stages of operative pro-

nized early, the patient will not be in extremis, and the operator may explore the region of the primary operation. Not infrequently bands of adhesion or kinks may be separated, at once reducing fluids and gases which pass along the bowel with audible gurgling. The enterostomy will not then be necessary. If enterostomy is considered necessary, a distended loop of bowel is stripped of fluids for a few inches and rubber clamps adjusted to keep the loop empty. The

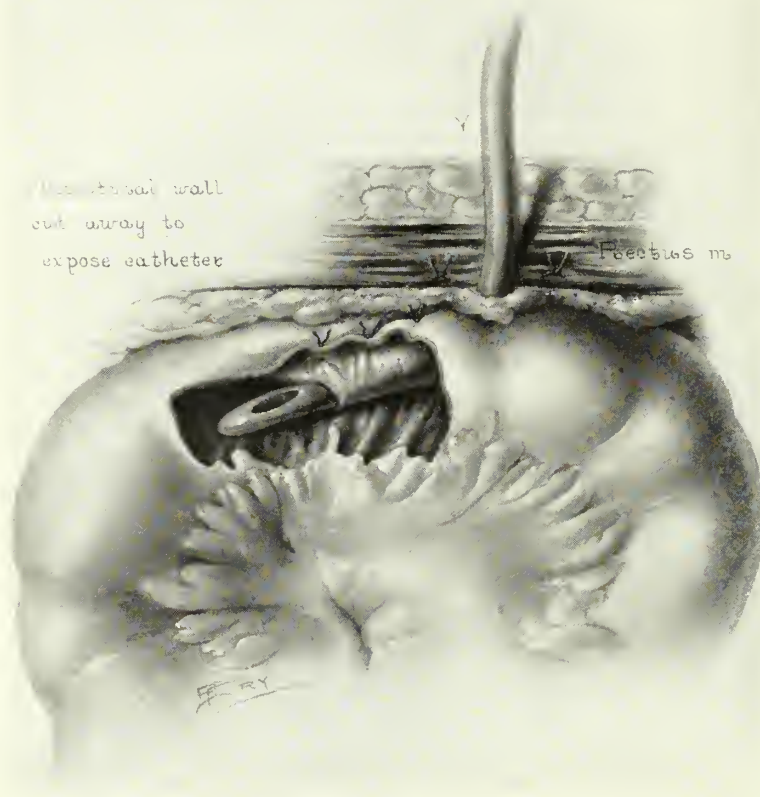


Fig. 1. Tube enfolded in the wall of the bowel, passing through the omentum and the abdominal wall.

cedure, such as the removal of an ovary, then an appendix, then the fixation of a movable kidney, drainage of the gall-bladder, and, finally, a gastro-enterostomy, as so often is done in a series.

The operation for purposes of nutrition is performed through a midline or left lateral incision, the upper loop of jejunum being found beneath the transverse colon and the omentum. When the operation is for the relief of obstruction it is best to re-open the former incision unless it is infected. If there is no general peritonitis and the obstructive condition is recog-

bowel is perforated opposite its mesentery, and a No. 10 English catheter is inserted a few inches into the lumen of the gut. A purse-string suture adjusts the bowel to the catheter, and the needle passed through its side fixes it in position. The suture may be chromic catgut or silk; if the latter, it comes out with the catheter. The catheter is depressed into the wall of the bowel, and its folds are sutured over the tube for an inch and a half; and a perforation is made in the adjacent omentum, and the catheter passed through it. The use of the omentum in this way aids in preventing leakage after the removal of the catheter,

and adds to the mobility of the intestine after the operation. The catheter may be brought out through the incision, in which case sutures are passed through the peritoneum, the omentum, and the intestine on each side of the tube, to hold it in position. In some cases a small perforation is made through the abdominal wall, a little to one side of the working incision, and sutures are adjusted beneath the opening. When the perforation is made for obstruction it is usually sufficient to leave the catheter in place from seven to twelve days. When made for the purposes of nutrition it is permanent in case of cancer, and is left as long as necessary in cases of persistent vomiting, since the stomach may be tested at any time, employing the tube when necessary.

The operation of jejunostomy has been made in our clinic in 43 cases for nutritive purposes since 1910. In the larger number of the cases the operation was necessitated by cancer, and it was palliative. Because of the serious condition of the patients the primary mortality was high, and the palliation brief. The operation is not one of great utility except in a few rare cases of non-malignant obstruction, or for the temporary relief of gastric fistula following perforation and operation. Twelve of the 43 patients died within a week, 4 died within a month, 4 within two months, 7 within a year, and 3 within a year and a half. Thus in all of these cases the operation served its purpose, namely, that of affording temporary or permanent relief of the condition which necessitated the operation.

Summarizing: Jejunostomy for nutrition is of occasional value; jejunostomy or other enterostomy for intestinal obstruction is of great value.

DISCUSSION

DR. ARNOLD SCHWYZER (St. Paul): It seems to me, jejunostomy should become more popular with us through the paper of Dr. Mayo. On the average, I do not believe we resort to this operation often enough. As to enterostomy lower down in the ileum in an obstruction of the intestine due to an appendiceal condition or any post-operative one. After we have done it once or twice, we will be convinced of the value of this little operation. A tiny incision is made. The point is that you go as near the cecum as you can. From there you take the first filled loop. You first put in a circular suture. You can then make the tiniest incision into the gut into which you can insert a very small catheter. There is no soiling. You empty the loop of intestine; you need not fix it to the abdominal wall. After securing the catheter to the opening of the gut you give the loop of intestine some freedom.

I venture to emphasize the point that where we have peritonitis, one might make another incision for such drainage or even a third one if it becomes necessary.

If the opening is so tiny that the catheter blocks itself, you can wash it out. The contents of the small intestine are thin, and you can get them out through a small catheter. We thus now and then save a patient who would otherwise go wrong.

When it comes to a real jejunostomy for feeding, one makes the incision as far up as allowable. Thus one also gets less tendency to leaking through the catheter.

Among the important conditions where this operation is of value Dr. Mayo mentioned profuse bleeding from gastric ulcers. It may be such as not to allow one to feed through the stomach. I remember in one of my gastro-enterostomies I made a gastro-enterostomy, and then through a gastrotomy wound inserted a catheter and allowed it to pass down through the anastomosis into the jejunum. Thus there was no adhesion of the jejunum, and we had feeding at once in the intestine, avoiding the stomach. This jejunal feeding is at times a most valuable procedure.

DR. SAMUEL J. MIXTER (Boston, Mass.): The operation that has been described by Dr. Mayo is very useful when it is indicated, and so simple that it is a pity that it is not done oftener.

I wish to speak of one case that I had where, not a jejunostomy, but a duodenostomy was performed for the relief of a state of starvation, the patient having complete obliteration of the stomach from the swallowing of an acid zinc-soldering solution. The stomach was found to be nothing but a cord about the size of a thumb, with a small granulating sinus throughout the whole length. In that case the duodenum was brought out, and the patient fed through that permanently. Unfortunately, after some months, he was lost track of. He was generally drunk, so that the subsequent history is unknown. However, for some months, except for the annoyance of feeding himself through the tube very often, he got along very well.

DR. A. E. BENJAMIN (Minneapolis): It is strange that this operation has not been adopted before by more surgeons. It is certainly one of the most gratifying to the patient of all operations that I have performed. Of course, the result is of a temporary nature.

In order to illustrate the benefit and the gratitude expressed by the patient, I shall relate one case of a man who came to me three years ago with an obstruction of the pylorus from an ulcer, in which I did a gastro-enterostomy. The man was in an extreme condition, and we were afraid he would not live even through that operation. He gained eighty pounds inside of six months. At that time the tumor occupied the region of the pylorus, and I told him we would have to do a partial gastrectomy later. He came back when he was in a bad condition again, but he was sufficiently strong to stand a partial gastrectomy. We removed about one-half of the stomach, and found our primary gastro-enterostomy acting perfectly, because we had made the anastomosis to the left side of the stomach. Later on, about a year I think after that, he came to me, and was in a bad condition again. He could not keep any food on his stomach, and he was very much emaciated. After observing him for some few days we did a jejunostomy. He immediately picked up, felt good, stopped vomiting, and this time we did the operation as Dr. Mayo has described it, which is an ideal way. We fed him through the tube. We were sure he was going to get one meal, at least. So far as we know the tube did not

leak, and we gave him a quart of water slowly into the bowel and fed him some liquid food. We kept that up until he left the hospital. Subsequently he died, as we naturally expected he would do, but the very fact that his relief was of a temporary nature and he was pleased over what we had done for him, shows what we can do for this class of patients. This should be an operation which should be done in a great many instances, if for nothing more than to save suffering.

DR. R. E. FARR (Minneapolis): One practical point in connection with this subject has confronted me occasionally in performing this operation that is done for inoperable cancer and for feeding purposes.

Dr. Mayo's practice in a locality where perhaps a great percentage of such patients come to him from long distances is a little different from that of the man who operates on a neighbor who lives in the same city, as the latter sees what happens a little later in the treatment of these patients. In several cases, in which I have operated there has been a great difficulty in keeping the tube in, or in getting it in again when it has slipped out. In one instance I brought out the bowel and united it to the skin, hoping in that way to get a permanent fistula. That was all right as far as it went, but the thickness of the abdominal wall caused a sort of spur of the bowel, and it would leak bile. I then hit upon the method of using a Pessar catheter, a large one of thick, hard, very resistant rubber, inserted by the technic described by Dr. Mayo. By making traction on the rubber outside, all leakage is prevented, a clamp being put on it between times. In that way we have had no trouble.

DR. ARTHUR N. COLLINS (Duluth): I believe a case which came under my observation about two years ago is worthy of record. This patient showed one of the numerous manifestations of syphilis. The patient, a printer by occupation and an expert on the typesetting machine, had for a number of years a syphilitic gastritis, which progressed to the point of complete obstruction. His emaciation was extreme. When I saw him in consultation he was in the last extremity, and could scarcely speak above a whisper. He could not raise his head from the pillow. He himself and his family gave up all hope of recovery. He had received

a jejunostomy previously on account of obstruction, but this had closed and he was now as bad as ever. I did an anterior gastro-enterostomy, using a Murphy button, under local anesthesia, and it was marvelous to see the way that man picked up under forced feeding.

In about four weeks he was ready for a suture-line gastro-enterostomy (the Murphy button had slipped back into the cavity of the stomach meanwhile). At this operation a most unusual condition was found. On examination of the stomach it was found that the lower pyloric portion, completing a circle of about three inches in width, was a thick, leathery mass entirely devoid of its lining of normal mucous membrane, so that the gastro-enterostomy had to be done high enough up to escape this thick leathery area and to establish the stoma in the normal mucous membrane area. The lower part of the stoma became partly involved in this leathery area later on, and symptoms of partial obstruction developed. Another operation was done, and the gastro-enterostomy stoma was extended upward, farther in to the normal area.

Since then he has had no trouble. He has gone back to his work as typesetter. He is practically normal, although he lives mostly on a liquid or easily digestible soft diet.

DR. A. W. ABBOTT (Minneapolis): My attention was called to this operation about twenty-five years ago by a very interesting case. A woman was brought to me who weighed about eighty pounds. She had a fistula of the jejunum. Her abdomen was absolutely covered with excoriations, and she was in a desperate condition. The interesting feature about it was this: There was a longitudinal opening in the jejunum, the loop of the bowel coming up very close to the skin of the abdominal wall. In watching I thought I detected some fluid passing along over the spur and on again into the distal jejunum. I gave her some milk with some bismuth in it, and I could distinctly see that, while large quantities of the milk came out through the fistula, some of it passed over and continued on into the jejunum. I took a hint from that and put in a catheter, and we fed her until she was able to stand an operation for closure of the fistula, which we did. After the operation she developed into a woman weighing two hundred and eighty pounds.

SOME REMARKS ON THE BIRTH-RATE*

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The importance of having an accurate knowledge of births and deaths is very great. It is just as valuable to the nation as a trial balance or invoice is to the business man. It makes up the human assets and liabilities of any nation or people.

In this great country we have been very remiss, and even today accurate data cannot be obtained

for the whole country, but only for the "Registration Area," which comprises the six New England States (Maine, New Hampshire, Vermont, Connecticut, Massachusetts, and Rhode Island), New York, Pennsylvania, Minnesota, Michigan, and the District of Columbia. The total population of this district is estimated at 31,150,000, or about 31 per cent of that of the United States.

On January 17, 1917, there was released from the Bureau of the Census, by Director Sam L.

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

Rogers, a statement making possible a study of birth-rates in the registration area of the United States, "this statement, giving the first federal statistics of births ever published," etc. I give this quotation from the above report to call to your attention the fact that not until the present year has the Federal government reported statistics

vention of poverty, crime, poor social and economic conditions, and even of war itself are all to be accomplished by following the formulae of the birth-control enthusiasts.

I believe in birth-control, but not the kind so strongly advocated by some. It is desirable to eliminate the defectives by preventing their propagation. This should be accomplished by the State enforcing isolation or sterilization of certain types of defectives. It seems desirable to give a little more consideration to the subject of birth-control because it is fundamentally bound up with the birth-rate; and any widespread dis-

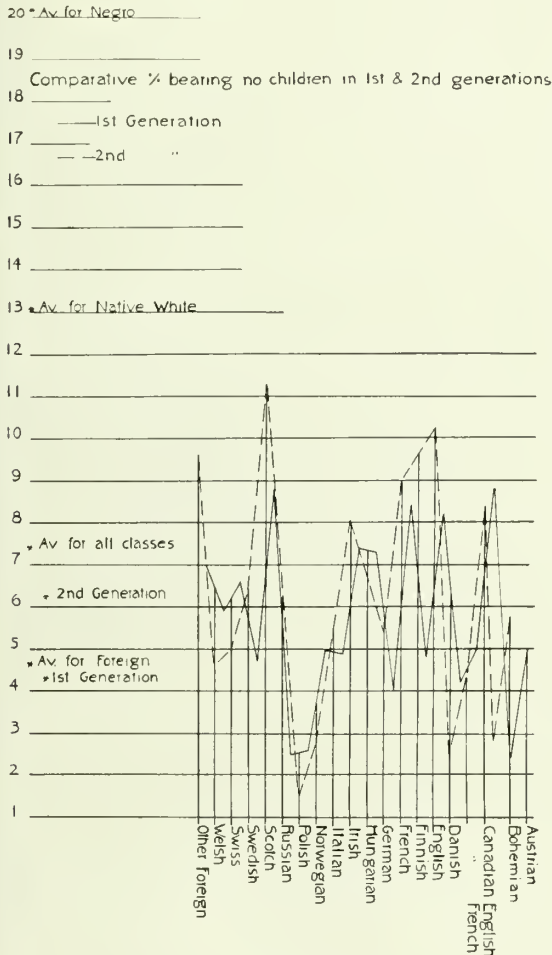


Fig. 1.

from birth-reports, and that even this is for less than one-third of the population of this country. It is not necessary to argue with you as medical men the extreme importance of such data.

A couple of years ago I began to develop a little interest in reading about the birth-rate. Perhaps it was stimulated by the birth-control propaganda. I wondered how really serious the danger of overpopulation was in this country from a high birth-rate. You all know more or less about the arguments advanced in favor of birth-control, from the standpoint of the individual, the family, and the community. The pre-

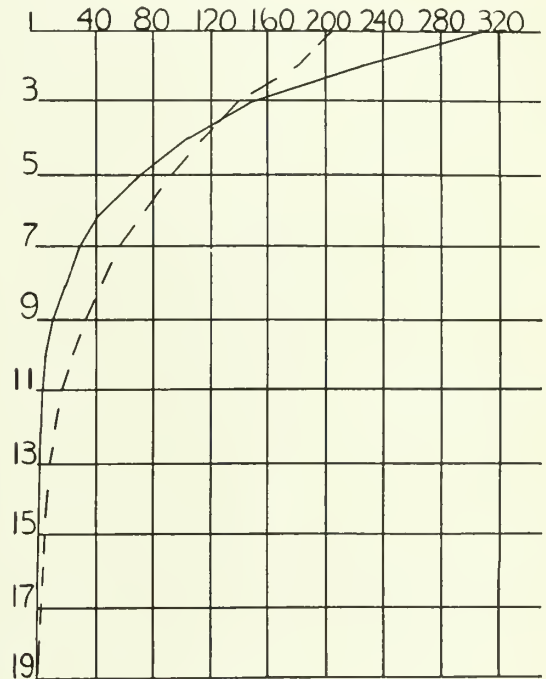


Fig. 2.

semination of information regarding methods of birth-control, whether sanctioned by legislation or not, is bound to have an ultimate effect on the birth-rate. It is having such an effect now. The natural increase of population in this country is due now largely to the offspring of the foreign-born population. In Minnesota the excess of the foreign-born over native is 40 per cent, and in Connecticut it is 300 per cent.

Birth-control can be considered from various points of view. It can be looked at from the standpoint of the individual or from that of the community as a whole. It can be considered from the viewpoint of legitimacy or illegitimacy, both as regards the individual and the community. It can be thought of economically as it af-

fects classes: those who are financially competent and those who are more or less incompetent. It can be viewed from the point of view of self-indulgence and sentimentality. It can be thought of as a measure forced on individuals for the purpose of race-betterment by the community, or as a means used by individuals for their own

but one which should have as its sole and ultimate aim the betterment of the race and its conditions of living.

It appears to be true that our birth-rate is decreasing, as is also the death-rate. The startling fact about the decreasing birth-rate is that the native population is not maintaining itself properly. The foreign-born who come to this country have the greatest number of children; and the next generation shows a considerable decrease. The question arises as to what will happen in this country to the birth-rate when immigration stops. Consider for a moment that it takes practically four children in every family to maintain a stationary population. In other

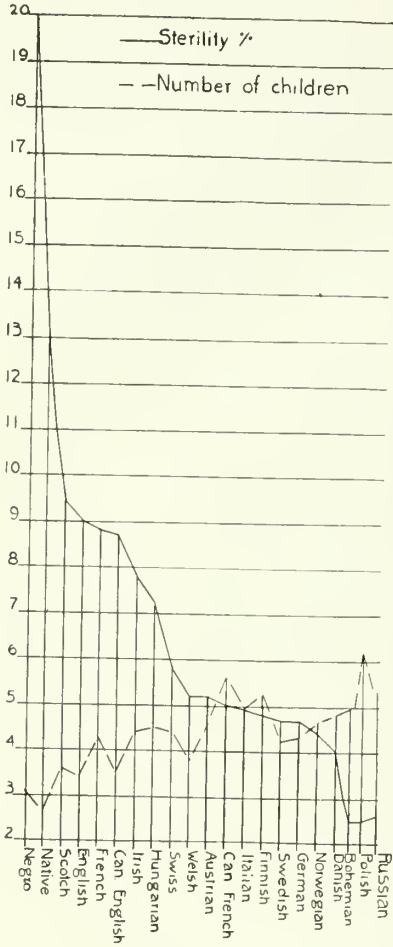


Fig. 3.

selfish ends. It should be considered from the religious and moral viewpoint in regard to its effect on the moral standards of the individual and ultimately of the community.

The effect on the physical well-being of the individual units making up the human race.

Arnold Bennet says "there are four principal arguments against birth-control, that is to say, against the use of contraceptives: the hygienic, the religious, the political, and the industrial." He disposes of all as unworthy of very serious, up-to-date consideration.

Let us not forget that the fundamental problem is not simply one of decreasing the population,

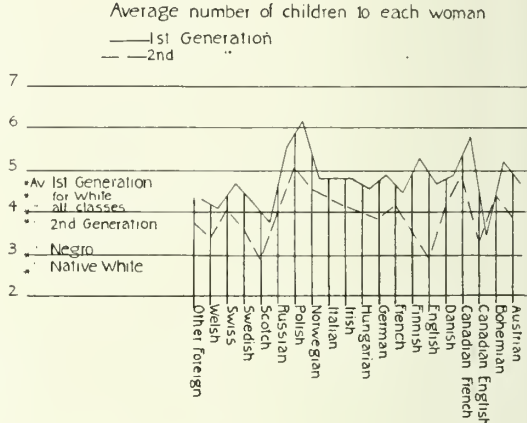


Fig. 4.

words, every woman in this country would need to have two children, and a certain number of them three, to compensate for the mortality. This requires no great amount of mathematical calculation. How many families do you know with four or more children? how many with no children?

Practically, one birth in twenty results in a still-birth. One infant out of ten dies before it reaches the age of one year. About one individual of every five dies before reaching the age of fifteen, or the age of productivity.

The percentage of unmarried to married at the age of forty-five and over is less than 10 per cent for the native white of native parentage, less than 15 per cent for native white of foreign or mixed parentage, about 10 per cent of foreign-born, and 5 per cent of the negroes.

The average age of twenty-five is passed before half of the population is married, at which time between one-fifth and one-fourth of those born are dead.

The percentage of sterility is over 13 per cent for the native white, and 20.5 per cent for the negro.

It would seem to be apparent from these statistics that three children in each family would not maintain the population.

The report of birth statistics which has just appeared from the Bureau of Census gives a birth-rate of 24.9 per 1,000 and a death-rate of 14 per 1,000 for the whole area.

It is stated that "the greatest excess of births over deaths—14.4 per 1,000 population—appears

crease of boys over girls was the greatest in fifty years.

The marriage-rate in 1915 was 19.5 per 1,000, which was 3.6 above the rate for 1914. It appeared to be decreasing in 1916. The birth-rate for 1915 was 22 per 1,000, which was 3.5 below the average for the previous ten years. The provisional rate for 1916 was 21.6 per 1,000.

In Germany the birth-rate has been decreasing since 1876, when it was 42.6 per 1,000. In 1906 the excess of births over deaths was 14.9 per 1,000, and in 1911 it was 11.3.

There has been a more marked reduction in Protestant than in Catholic districts.

In 1912 the birth-rate in Berlin was no longer sufficient to maintain the population. Kuczynski states: "As the tables of fecundity of Berlin show that, with an annual special birth-rate of

Vital Statistics of N.Y. State

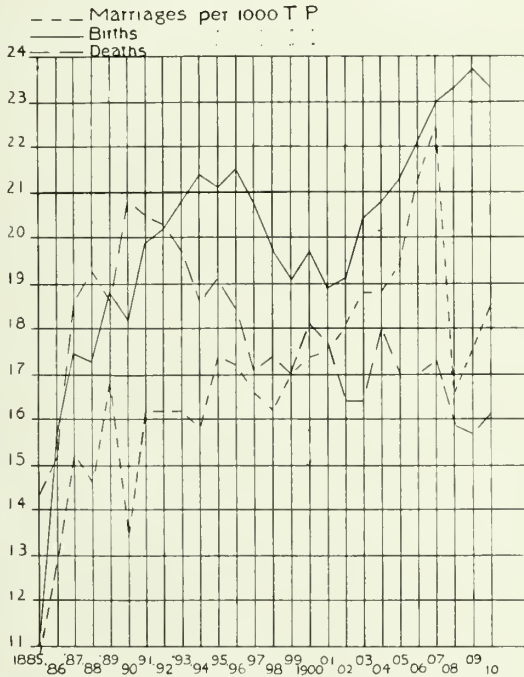


Fig. 5.

for Minnesota, and the smallest—5.5 per 1,000—for Maine." The birth-rate for the colored population is 20.6 per 1,000, with a death-rate of 22.9 per 1,000.

Among the important things for us to know concerning the birth-rate are (1) the rate compared with that of other countries; (2) whether there is a decreasing or increasing rate in our country; and (3) what elements in our population contribute most largely to the growth.

The decline in the birth-rate is not peculiar to our country. In England and Wales the first year of the war showed a decrease of 2.1 per 1,000 below the average of the preceding ten years. From July, 1915, to June, 1916, the in-

Percent of Total Population

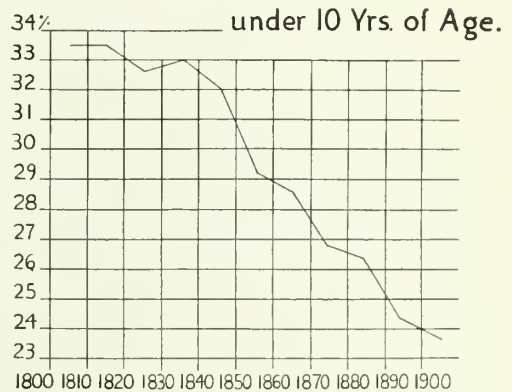


Fig. 6.

ten for every 100 women in child-bearing age in 1891-1895, the births were one-ninth behind the number necessary to keep up the stationary population of Berlin, it is therefore probable that the native population of Massachusetts, with a special birth-rate of only 6.3 births for every 100 adult women of child-bearing age and a mortality of the female sex not correspondingly lower than that of Berlin, cannot only not hold its own, but is dying out at an alarming pace."

Wilbur, in a study of conditions in Michigan, found that the native population did not afford enough children per marriage to maintain itself, and that in some of the older settled communities there was a decrease in population not wholly to be accounted for by emigration. He remarks "that in a country so young as ours, and long before the density of population can begin to press upon the means of subsistence, such a tendency to

stoppage of growth should exist, certainly calls for inquiry."

In the first annual report of "Birth Statistics" it is noted that "for every state in the registration area and for most of the cities there was a substantial excess of births over deaths, which was most pronounced in those localities in which the proportion of foreign-born population was largest."

It is rather difficult, in fact it is impossible, to compare the births of one decade with another in this country because of poor birth-registration. We have, therefore, to get our data more or less indirectly. Most of this information may

country at 30.95 per 1,000 in 1880, and 26.68 per 1,000 in 1890. It is now 24.9 per 1,000.

"The assumption that there has been a progressive increase in the inaccuracy of the censuses leading to omissions of larger and larger proportions of children is too improbable for serious refutation, and yet no other alternative can be suggested by aid of which to escape the conclusion that the birth-rate has declined persistently since 1860."

The reports of the 1910 Census show that the percentage of children under ten years to the total population decreased from 24.3 per cent in 1890 to 22.2 per cent in 1910, while that of those

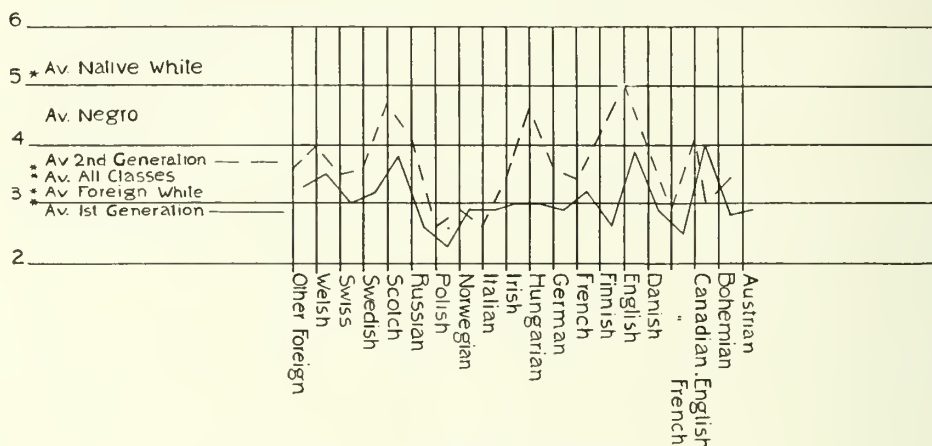


Fig. 7.
Average number of years married for each child born.

be gathered from Census reports. A study of the percentage of children under ten years of age to the total population shows a gradual but constant decrease from 33.5 per cent in 1800 (estimated) to 29.1 per cent in 1850 to 23.8 per cent in 1900 and 22.2 per cent in 1910.

The number of children under five years of age to 1,000 females of ages 15-49 years decreased from 626 in 1850 to 474 in 1900.

In New York state the marriage-rate has increased more than the birth-rate, while the death-rate has steadily though slowly decreased.

In the Census Report of 1900 it is stated that "the proportion of children under ten years of age to the total population can be ascertained for a longer period. It has decreased almost uninterruptedly since the early part of the century, the number of such children constituting approximately one-third of the total population at the beginning of the century and less than one-fourth at the end."

J. S. Billings estimated the birth-rate in this

under five years diminishing from 12.2 per cent to 11.6 per cent during the corresponding period.

There can be very little doubt that we have a gradually diminishing birth-rate in this country.

So far as causes are concerned Walker believed "it might be said that the growth of the native population was checked by the incoming of the foreign elements in such large numbers."

Billings thinks "it is probable that the most important factor in the change is the deliberate and voluntary avoidance or prevention of child-bearing on the part of a steadily increasing number of married people, who not only prefer to have but few children, but who know how to obtain their wish." The reasons given are (1) the dissemination of knowledge of contraceptives, (2) changes in ideals, (3) selfishness and the desire for luxuries. Stone considers that 12 per cent of sterility is due to disease, about one-seventh of this being due to disease in the male.

He believes that late marriages, the use of contraceptives, and diminution of religious influ-

ences are the potent factors in the diminishing birth-rate.

It will be of interest to see what portions of our population show the greatest deficiency in child-bearing.

Wright investigated the fecundity of female graduates of all colleges open to women. He found 27.8 per cent unmarried. Of those who were married 33.7 per cent had no children. The average number of living children for each married woman was 1.2+.

Phillips, writing of Harvard graduates, estimates that 5,618 graduates investigated will have

Engelmann, in 1902, showed a much lower birth-rate for natives than for foreigners, and a smaller average number of children. He collected data showing that in St. Louis the average number of children for native parents of the laboring class was 2.1 and of the higher class 1.8, while the foreign parents had 3.8 children per family. Chadwick found a similar condition in Boston, where the laboring class of native parents averaged 1.8, and the foreign-born 3, children in a family.

Young, in a study of conditions in New Hampshire, found corresponding conditions, and he

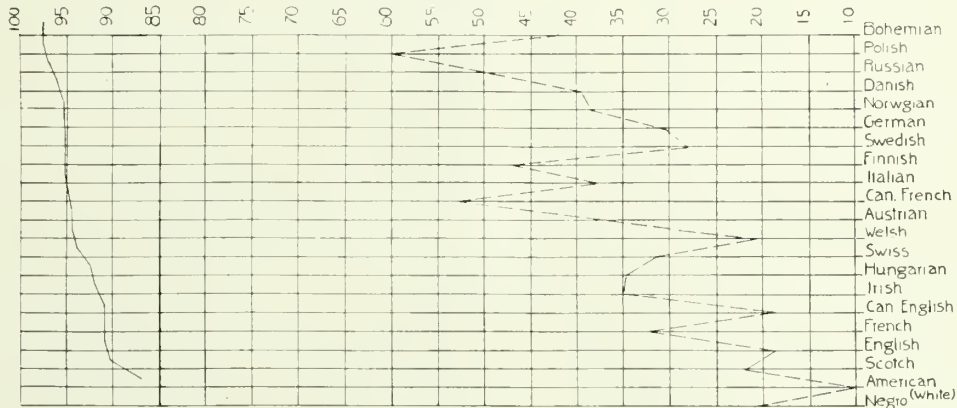


Fig. 8.

Solid line indicates per cent having offspring; broken line, per cent having more than five children.

at the end of two hundred years 852 male descendants.

There seems to be little doubt that the foreign-born population of this country has a much higher birth-rate than the native-born.

In 1875 the census of Massachusetts showed that foreign-born mothers averaged 4.9 births and the native-born only 3.5.

In a United States Census report of 1900 it was established that in 1890 there were 475 children under five years of age of native parentage, and 666 of foreign parentage to each 1,000 women 15 to 44 years of age; in 1900 the ratio was 462 to 710.

Kuczinski, in a study of conditions in Massachusetts in 1900, found 53 per cent of adult native women without children against 41 per cent of foreign women. He found the average number of children to each native woman married 2.69—to each adult 1.58; to each foreign woman married 4.53—adult 3.07.

He found the average number of children was two-thirds higher for foreign parents.

states "it is evident that not only is the fecundity of those foreign-born women who bear children greater than that of native women, but that also a larger proportion of foreign-born married women bear children."

Hill, who studied the fecundity of women in connection with his work with the Immigration Commission, found a much higher percentage of sterility among native whites (13.1 per cent) than among foreign whites (7.4 per cent). He also found the average number of children for women under 45 years (married 10 to 20 years) to be for the above groups 2.7 and 4.4.

Investigation of the foreign population shows "the tendency of the second generation, as compared with the first, is not so much in the direction of no families as it is in the direction of small families."

The probable birth-rate in our country (1915) is 24.9 per 1,000 of total population. There are four countries of Europe with a lower birth-rate: (1) England, and Wales (1913) 24.1; (2)

Switzerland (1913) 23.1; (3) Belgium (1912) 22.6; and (4) France (1912) 19.

In cities the natives tend to have fewer children than in rural districts.

The proportion of male births to female is 1,055 to 1,000, but the infant mortality of males is 110 to 89 females.

This may seem to be a subject rather out of place in a medical society, but it seemed that it would be of interest and profit, not only to us, but to the community through you.

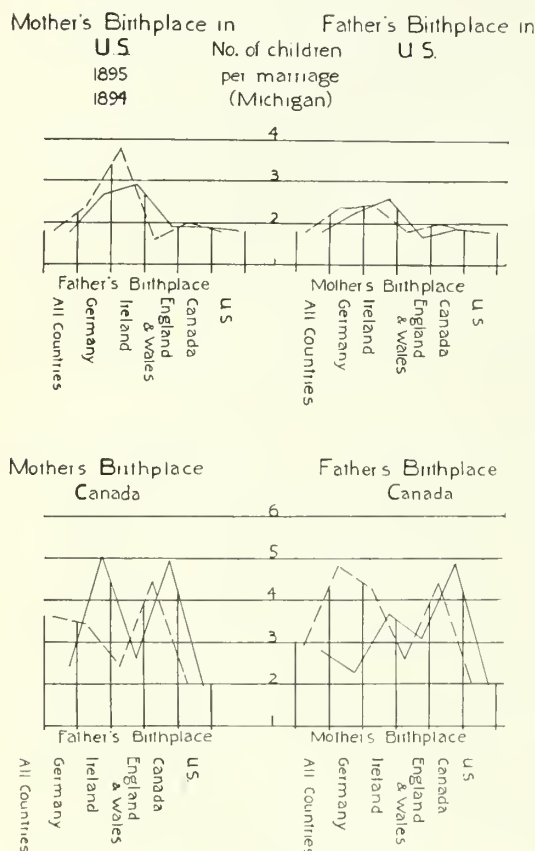


Fig. 9.

The necessity for more complete and accurate information is apparent.

Birth-registration is of great importance in many ways, and physicians should recognize the fact.

Women in many instances should be encouraged to go through pregnancy and labor by proper care and the alleviation of the discomfort and pain to as great an extent as possible. Many medical men do not take proper interest in their obstetrical work.

Any advice regarding the use of contraceptives

should be given with due regard to the individuals and the community.

In the event of pregnancy all possible means should be used to end the gestation at the proper time, leaving a healthy mother and child.

Proper supervision should be given, in the interest, not only of the mother, but also of the child, for it must be possible greatly to reduce the tremendous mortality of the first weeks and year of infant life.

The gradually declining birth-rate is one of the strong arguments for making every gestation bring forth a perfect fruit.

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DISCUSSION

DR. J. C. LITZENBERG (Minneapolis): On account of the lateness of the hour I shall not take up the point I wanted to discuss in this paper.

A statistical paper of this kind is likely not to make the impression when read that it deserves. I have had an opportunity to read this paper, and I hope when it appears in print that every member of the Association will take the time to study these figures, because Dr. Adair has accumulated them, not simply out of curiosity, but for the purpose of showing certain pertinent facts; and the most pertinent fact is that the birth-rate is decreasing, in spite of the fact that our death-rate along certain lines is also decreasing. A decrease in the birth-rate compared with the death-rate is inimical to the public welfare.

This paper becomes one of tremendous economic importance because, sooner or later, this country must face an economic question which will demand the attention of statesmen. The birth-rate cannot continue to decrease, and the prosperity of the nation also continue upward.

It is perfectly manifest that there are only two ways of saving this economic situation: One is to increase the birth-rate; and the other is to decrease the death-rate so that the relation of the two may be maintained.

I am sorry I cannot discuss the paper at length, because I believe that we have a great responsibility put upon us as physicians to call attention to this fact because of the tremendous economic importance of it.

We have heard a great deal of late about health and

happiness, infant and child welfare, etc. Perhaps much of this is sentimental, due to our love for babies and our desire to save them. But the problem is more fundamental than this. It is economic; and when the time comes that this nation is forced to look upon this question as an economic danger, then it will be too late. Therefore we as physicians and as medical societies owe it to the public that this sort of education be given to them, so that the situation may be met as an economic question. That is the thing I urge.

We have several propaganda as to public health, such as pertain to tuberculosis, cancer, pre-natal care, etc.; and we must give all of them our enthusiastic support because we cannot see very much encouragement in getting at these problems from an increase in the birth-rate. However, when State Medicine comes—and it is coming—there may be something done by the State, and it behooves us as physicians to do it first and not have it forced upon us, as they had it forced upon them in England.

DR. AUGUST KUHLMANN (Melrose): This is a very interesting paper, and gives much food for thought. "It is a great economic subject and a great question," Dr. Litzenberg states. I wish to say that it is a great patriotic question. The future of our country depends upon our babies. It is a very delicate subject to discuss, and we should not decide it from a medical point of view alone. It is a tremendous moral and sociological subject of vital importance for the existence of a nation.

If our women are going on a strike,—what they are partially doing already,—then we as physicians and as members of this noble and most humane profession should not side in, and should by no means encourage this movement of birth-control.

It is a regrettable fact that last year some prominent men from our University, and, what is especially peculiar, some from the agricultural department, came out openly in our daily papers preaching and talking about human birth-control. That is hay-barn philosophy! Of what use is a hay-barn without cattle in it?

DR. IDA M. ALEXANDER (Sauk Center): Public opinion, as expressed in the newspapers, magazines, and public speeches, has of late years put the emphasis, not on the number of children born, but on the number that reach full maturity strong in body. It is a step in the right direction. The mothers, potential and actual, have responded to the teaching, and the large family is now scarce. Apologetically now does the mother of a large family admit the fact.

Today mothers are limiting the family for reasons public opinion taught them:

1. Financial inability to give the child the material advantages required.
2. Physical inability to give the child the healthy body required.
3. The dread of pain, suffering, and even death, especially magnified among the purely city-bred type,

who, because of the continuous sense-stimulation of city life, have supersensitive nervous systems that are easily exhausted.

The conscientious mother of today is between two millstones: the State that says more children, and public opinion that says better children. Is it any wonder that, in her struggle to raise better children, she is not able to raise as many? The remedy lies with the State: Remove the cause.

DR. ADAIR (closing): It is always dangerous to make dogmatic statements, even in a medical meeting. What I did say about my belief in birth-control was that I believed it should be controlled by the State, to eliminate certain defectives by isolation or sterilization. Those may not be the exact words I used, but they give the idea I wished to convey.

I do not believe in indiscriminate and artificial birth-control. I do not believe in the popular dissemination of knowledge regarding the use of contraceptives. I do not believe in the induction of miscarriages as promiscuously as it is being done. I do not believe in this artificial control of the birth-rate.

I agree with many things Dr. Alexander has said regarding the variations of the birth-rate. I think I stated,—I tried to make it clear,—that we should not draw absolute and definite conclusions, because all of our conclusions are based on indirect information. What I wanted to bring out in the paper was, first, the stimulation of thought about this matter. I did not desire to draw any absolute conclusions.

Secondly, I wanted to stimulate your interest in proper birth-registration which, fortunately, is not so necessary in Minnesota as in other localities. I wished to stimulate your interest in the extension of the registration area. I wanted to call your attention to the fact that we are not in any danger at present of a decrease in our population from natural causes.

I think I made it clear that the birth-rate is in excess of the death-rate by a wide margin, the lowest being 5.5 per 1,000 in Maine; but I do call your attention to the fact that foreigners of the first and second generations, especially the latter, who are living under the same conditions as our native whites, are much more productive, and that our population is increasing much more rapidly from the foreign element than it is from the population which has been here much longer. I believe that this is due, not to natural causes, but to artificial ones; and it is the artificial causes of the diminution in the birth-rate with which I particularly wish to impress you.

Of course, we all know that the total population of the world has certainly increased in the last five thousand years. That it is going to be subjected to any rapid or sudden decrease, that the world is going to be depopulated, I do not believe for a minute; but I do want to impress some of these facts on you by these statistics.

RICKETS, WITH ESPECIAL REFERENCE TO PREMATURE INFANTS*

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Rickets is the most frequent disease of infancy, and is much more prevalent than is usually recognized. C. U. Moore, using the material of the Minneapolis Infant Welfare Clinics, found that out of 942 infants examined during 1916, 362, or 38.5 per cent, showed definite signs of rickets. Of these 362 cases, 134 developed rickets while on the breast or after nine or more months of breast-feeding. From this it is evident that the old idea that improper feeding is the sole cause of rickets must be revised. It is true, however, that, aside from the susceptible negro race, rickets in breast-fed infants is usually mild, while the severer forms of rickets are most frequently associated with poor feeding, more especially the feeding of proprietary preparations. The true etiology of rickets is still unknown. There is, unquestionably, a disturbance of calcium metabolism, so that, even when the calcium intake is sufficient, the bones are incapable of assimilating it, with a consequent excessive calcium excretion. The ultimate cause of this disturbance of the calcium balance is, however, not fully known. Heredity, racial characteristics, poor hygienic surroundings, and poor feeding are, undoubtedly, contributing causes, but in themselves do not adequately explain the wide prevalence of rickets. A study of rickets in premature and twin infants throws a further light on this question, which has heretofore received too little attention in this country.

I have collected seventy cases of premature and twin children coming under my personal observation at the Pillsbury House Clinic of the Minneapolis Infant Welfare Society and in private practice. Of these 70 cases, 58 developed definite signs of rickets; of the 12 that did not develop rickets, 3 were under observation too short a time and 4 were but two to three weeks premature, leaving only 5 definitely premature infants that did not develop rickets. Therefore, 58 out of 63, or 92 per cent, of premature and twin infants were found definitely rachitic. The time of occurrence is of interest, because rickets usual-

ly does not begin before the sixth month. Of 33 cases, seen for the first time at or before four months, 27, or 81 per cent, showed evidence of rickets at that time. The first symptom usually noted was craniotabes, which in three instances was present as early as six weeks. Care was taken to differentiate between craniotabes and congenital softening of the skull. This latter condition practically disappears by the end of two months, while craniotabes tends to grow larger up to six months or more. In doubtful cases the diagnosis was made only after repeated observation.

Why does rickets appear so early and so universally in premature infants? The answer must be sought in the chemical constitution of the fetus. According to Fehling, as quoted by Langstein and Meyer, a six weeks' fetus is made up of 97.5 per cent water and 0.001 per cent mineral constituents; at the sixth fetal month, of 89 per cent water and 1.94 per cent ash; at birth, of 71 per cent water and 3.3 per cent ash. Birk has expressed this same thing in actual weights. He found that at four months there are 14 grams of ash; at six months, 30 grams; and at nine months, 100 grams—showing that two-thirds of the mineral is taken on in the last three months of fetal life. In the new-born fully 75 per cent of this ash is made up of calcium and phosphate, the chief constituents of the bones. It follows, therefore, that the more premature the infant, the greater will be the deficiency of calcium and other minerals, so that by the third or fourth month of extra-uterine life the supply is entirely exhausted, and rickets results. Whether this rickets of the premature is a true rickets,—that is, a genuine disturbance of calcium metabolism,—or a so-called false rickets due merely to a shortage of calcium, has not yet been determined. The prevalence of rickets in twin infants born at term is probably also due to a calcium deficiency, the supply being inadequate for two infants. If there is a direct relation between an insufficiency of calcium at birth and early rickets, we should expect prematures to suffer frequently from that other disease of calcium metabolism, spasmodophilia. As a matter of fact, Rosenstern has found

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

in 76 per cent of premature and congenitally weak infants a heightened electrical reaction, indicating a latent spasmophilia.

The study of this deficiency rickets in prematures has led to the theory that many other cases of rickets are caused in the same way,—that is, full-term infants, other than twins, may be born with a calcium deficiency due to causes as yet unknown. There is, at the present time, no experimental evidence to support this theory, but it is the most adequate explanation of those cases of rickets which develop in breast-fed children under ideal surroundings.

How do these new facts alter the treatment of rickets? The hygienic and dietetic measures long used remain unchanged. Fresh air and sunshine are more important than ever. The Negro and Italian races in the out-door life of their native lands rarely develop rickets; but in this country, in crowded unhygienic surroundings, the disease is almost universal in a very severe form. Diet has lost none of its importance. The infants should be breast-fed if possible, and, if artificial feeding is necessary, the proprietary foods, especially those which do not require the addition of cow's milk, should be avoided. Cereals and vegetables should be added to the diet as early as the sixth month, and the amount of cow's milk cut down in proportion. If there is severe anemia, iron may be given, though ordinarily the iron contained in the vegetables is sufficient. In artificially fed infants, the famous prescription of Kassowitz, phosphorus and cod-liver oil, is still the most effective medicinal agent, though in recent years the phosphorus has been shown to be relatively unimportant. It is the treatment of rickets in breast-fed infants that is chiefly affected by the newer work. Breast milk contains only a very small amount of calcium and phosphorus,—about one-fourth of the amount in cow's milk. Schloss, in a series of brilliant metabolism studies, proved conclusively that cod-liver oil alone does not bring about a positive calcium balance in breast-fed infants with rickets. He showed that calcium must be given to supply the deficiency in the breast milk, that by far the best calcium preparation is tricalcium phosphate, and that the greatest calcium retention is brought about by this preparation in conjunction with cod-liver oil. Schloss, in his work, did not distinguish between full-term and premature infants, but, if calcium is necessary in full-term infants, how much greater must be the necessity in premature infants with their greater calcium shortage!

For the past two years I have been using tricalcium phosphate and cod-liver oil in the treatment of rickets in breast-fed infants, both full-term and premature, with very good results. In the beginning I had great difficulty in obtaining a smooth and palatable mixture, but finally found that 10 per cent of tricalcium phosphate (C. P.) in emulsion of cod-liver oil (U. S. P.) makes a smooth suspension, which is readily taken by most infants.

To summarize:

Rickets is found in 92 per cent of premature and twin infants. This is due to a deficiency of calcium at birth.

Calcium in the form of tricalcium phosphate must be added to the usual treatment.

DISCUSSION

DR. J. T. CHRISTISON (St. Paul): Dr. Huenekens' paper opens up a new field. It is true that the experimental work done by Schloss along this line has not proven very much. We still believe that this is only one of the things which are causative factors in the production of rickets. We also believe that the health of the mother during the time that the child is in utero has something to do with it; and, whether the mother fails at this time to provide the child with the proper amount of calcium, the fact remains that children born of sickly mothers are more prone to develop rickets than those born of healthy mothers.

I think most of you will agree with me when I say that a lack of fats in the infant's organism has something to do with the production of rickets. We know full well that in a diet containing an excess of fat, the fat itself, by disturbance of digestion, upsets the proper balance, and the child develops rickets.

We also know that high starch percentages, by doing the same identical thing, upset the digestion, so that the child cannot properly assimilate its fats, and that that is a causative factor in the production of rickets.

Assuming then that the child, during the latter three months of its intra-uterine existence, acquires more calcium than it does in the preceding six months, how are we going to reconcile the fact that this familiar prescription which Kassowitz mentions, of phosphorus and cod-liver oil, brings about, in the great majority of cases, a cure of rickets? I wonder if it is not reasonable to assume that in the organism a small amount of calcium, uniting with the phosphorus, enables the child to retain in the form of phosphates, a greater amount of calcium than it otherwise would do?

Let us take, for example, the experiments made by Bland Sutton at the Zoological Gardens in London on young monkeys, bear cubs, and lion whelps born in unusual surroundings all prone to develop rickets. We are not at all sure whether these animals develop rickets in their native surroundings, but we are absolutely sure that they do when they are born in captivity.

Mr. Sutton undertook the feeding of these animals with large quantities of fat and cream, to which he added ground or pulverized bone, with the result that

they very soon overcame their rickets, and grew and developed into healthy and strong young animals.

So I think the fact that Dr. Huenekens has brought out here—that is the main fact—is that we must get into the organism calcium in some form, whether by the administration of cod-liver oil and phosphorus or by way of tri-calcium phosphate, we must have the elementary things that go to make up the formation of bone.

It is true that, in the unhygienic surroundings of our large tenements, in cities like New York, Boston, or Philadelphia, the great majority of children acquire rickets. Then, too, we must not lose sight of this fact which Dr. Gillette pointed out to us a number of years ago, and that is the cases of extremely mild types of rickets which we do not recognize where the child is fretful and irritable, and no one seems to know just what is the matter with it. A careful going into the history of the feeding of that child, together with a careful examination of it, will usually reveal the necessity for the administration of some form of phosphorus and cod-liver oil, whether tri-calcium phosphate, or what not.

DR. WALTER R. RAMSEY (St. Paul): I want to compliment Dr. Huenekens on his paper. I think he covered the subject in very great detail, so that it is not necessary for me to talk about the part of it which he covered.

I want to emphasize the fact that rickets, as usually supposed, is not limited to the great cities. That fact was very well demonstrated to us for two or three years when we had what, I think, they called an infant contest at the State Fair. Some prizes were offered (several hundred dollars) for the best infants, physically and mentally developed; and that offer brought several hundred children to the State Fair for examination. It was very interesting to find that a tremendous percentage of those children had rickets, so that the examiners were able to eliminate them almost at once. They had very definite signs of rickets.

It was rather surprising, too, that a good many times their doctors came in with the children. They thought they had prize-winning babies, and they were very much surprised when they were thrown out at once because they were suffering from rickets.

A lot of these children that are apparently very well nourished, have rickets. Those that are very fat are usually very pale; and many of those have the rachitic

rosary and the enlarged epiphyses, and show, upon examination, very definite signs of rickets.

I think Dr. Gillette would emphasize the importance of recognizing these cases of rickets early.

The condition in which some of these children with rickets come to the State Hospital is perfectly appalling sometimes. I have not been there very much lately, but for many years I was on that staff—I think I am yet; and I have observed the very severe deformities that come in as the result of rickets.

I also want to mention that because there is no excuse for it. It is very readily recognizable, even in its incipient form. The enlarged epiphyses at the wrists and ankles, the rachitic rosary; the little or large beads at the junction of the sternum and the ribs; the square head; the enlarged fontanelle, still open at twenty months and very often later; the great irregularity in the dentition, and many times the character of the teeth as they erupt without enamel—all of these things are so very easy to make a diagnosis from that they should not be overlooked. Those children should be put upon a proper diet, and if done early enough, there is no excuse whatever for the frightful deformities which often result.

DR. CHARLES R. BALL (St. Paul): I would like to ask a few questions on this subject. What is the relationship between the so-called spasmus nutans and spasmophilia? and what relationship does spasmophilia bear to rickets? also how do the convulsions in rickets differ from the convulsions in spasmophilia?

DR. HUENEKENS (closing): So far as we know there is absolutely no relationship between spasmus nutans and spasmophilia. There is no direct relation between spasmophilia and rickets, except that they both depend to some extent on disturbed calcium metabolism, and are frequently associated. The convulsive spasms of rickets are invariably due to spasmophilia, which is associated with rickets. There are no convulsions which come with rickets itself other than from the accompanying spasmophilia.

I want to say one further word: This newer work in calcium metabolism and rickets has opened up fruitful talk about theory, and I have omitted the possibilities that it has opened up as of no particular benefit. I want to emphasize the likelihood of rickets, and especially in premature infants. I should say, roughly, that probably two-thirds of the cases go unrecognized altogether.

NEPHROLITHIASIS*

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Stone in the kidney is always a menace to life. Its presence constitutes a standing invitation to infection. Calculous anuria is one of the most grave and dreaded crises confronting the surgeon. The septic stone-kidney causes focal abscess, pyelitis, pyonephrosis, pyelonephritis, perinephritic abscess, complete destruction of the organ, secondary systemic intoxication, and general sepsis. The aseptic stone-kidney develops secondary degenerative changes, chronic interstitial nephritis, lipomatosis, destructive atrophy, and complete transformation to fat and fibrous tissue. Hydronephrosis, frequently intermittent, is a common result. Cancer is associated with stone in the majority of cases, and probably is secondary to stone, as in the gall-bladder. The writer believes the aseptic stone-kidney and the septic stone-kidney to be, usually, stages, rather than types, of the disease.

The classical text-book description of nephrolithiasis leaves one with the impression that the disease is easy to diagnose. This has not been the writer's experience.

The sudden onset of colic; of pain in the back, loin, and groin, the pain shooting into the testicle, penis, and bladder; and of strangury signifies nothing more than that there is present an increase in the intrapelvic pressure, and that the muscle layers of the pelvis and ureter are protesting. The obstruction to the outflow of urine may be caused by a kink in the ureter, a plug of mucus, a blood-clot, pus and necrotic debris, a papilloma, detached pieces of friable tumors, or a stone. The colic is not pathognomonic, but simply calls attention to the urinary system. *The great majority of cases of nephrolithiasis do not exhibit this so-called renal colic.* Not alone is the so-called typical colic absent, but the majority of the cases do not even have pain in the affected kidney. Stones mask under the "near" symptoms of the more common diseases, such as gall-stones, cholecystitis, appendicitis, digestive disturbances, so-called acute indigestion, acute ileus with meteorism, lumbago, stitch in the side, Pott's disease, pleurodynia, cystitis, etc. Fortunately, the symp-

toms are always "near" symptoms, and the cases do not check up quite right.

The writer has nine times removed stones from the kidney or ureter, in cases which had previously had their appendices or gall-bladders, or both, operated on without relief. Lumbago has been a common complaint. He has seen an able, first-class surgeon perform arthrotomy for suspected acute osteomyelitis of the neck of the femur with an atypical abscess, to find that the abscess led to a pustulous kidney containing stones. Probably the most able surgeon in this state reports having twice operated on the kidney for stones to find that the stones were in the gall-bladder. What is the deduction? This: that our diagnoses must be made more by exclusion, not by clinical exclusion alone, but by data obtained from the laboratory, the x-ray, the cystoscope, with the catheter and the pyelogram. Every case which does not check up quite right demands complete, thorough study. When a suspicious shadow is obtained in the roentgenogram, it must be proven to be within the kidney or ureter by pyelogram, uretergram, or x-ray with an opaque catheter in the ureter, thus excluding gall-stones, calcified lymphnodes, pleboliths, appendiceal fecoliths, etc.

X-ray.—The Röntgen study may be worse than useless unless properly made, in that a false sense of security may obtain. The patient must be prepared by thoroughly emptying the alimentary canal and by dietetic restriction. Skiagraphs of both kidneys, both ureters, and the bladder must always be taken. Typical renal colic or kidney pain, when present, may manifest itself on the opposite side from the kidney containing the stone. The writer has had a case in which pictures of the right kidney and ureter, taken by two different roentgenologists for right-sided renal colic were negative, when the complete series of skiagraphs showed a large stone present in the pelvis of the left kidney. Kidney stones occur bilaterally in from 10 to 20 per cent of all cases; hence the necessity for pictures of both sides, even when a positive shadow is obtained from one side.

Kidney-stone shadows should be anatomically located, by the aid of pyelography, as being in the pelvis, the calyx, or the cortex, in order to

*Presented at the Forty-ninth annual meeting of the Minnesota State Medical Association, St. Paul, October 11 and 12, 1917.

assist in deciding the route for their removal,—not alone as between pyelotomy and nephrotomy, but in the proper placing of short incision in the latter case, over the predetermined site of the stone. The post-mortem splitting from pole to pole should be discarded. A skiagraph taken shortly after the operation is valuable to determine whether all the stones have been removed, even though the number of stones corresponding to the number of shadows are accounted for. Overlapping shadows may have concealed other stones. If this precaution became routine practice, there would be fewer cases of so-called recurrence.



Fig. 1. Stone in the kidney pelvis, removed by pyelotomy.

The x-ray in the hands of the expert shows most stones. If the result be negative and the case suspicious, the wax-tipped catheter of Kelly should be employed in an endeavor to obtain scratch-marks. The writer introduces these like a filiform bougie, unguided, into the bladder through the urethra which has previously been lubricated by the injection of glycerine. The proximal end is then threaded through the guide of the cystoscope, which is then introduced into the bladder. Scratching of the waxed tip by the instrument is thus avoided. Stones that do not cast shadows may scratch the waxed tip, and thus the procedure is a most valuable one. The writer has twice obtained scratch-evidence where the x-ray failed.

Hematuria, macroscopic and, particularly, microscopic, is a more constant and valuable symptom than colic. It calls attention to the urinary system, at least. Microscopic blood in the urine, appearing regularly, particularly after vigorous

or violent exercise, is extremely suggestive of stone. Hematuria, however, may be the first symptom of tuberculosis of the kidney, of hypernephroma, malignancy, or essential hematuria; or it may be purely toxic in origin.

Pyuria is a common finding, and signifies a de-



Fig. 2. Pyelogram, the shadow cast by the injected thorium solution covering the shadow cast by the stone, thus proving the stone to be in the pelvis.

structive process. The pus may be microscopic, or the urine may be grossly turbid and even milky. The pus can sometimes be seen emerging from the ureteral orifice like a strip of tooth-paste from a compressed collapsible tube. While pus and blood are common findings, the urine may be absolutely normal. The specimen from the female bladder should always be obtained per catheter.

The Murphy hammer fist-percussion is a most valuable method of examination, particularly in differentiating between appendicitis during the interval and nephrolithiasis. The palm of the open hand is placed on the back, over the kidney, and struck with the fist. Extreme acute pain will be frequently experienced in stone-kidney from the resulting jolt. The Boas sign, or pain on pressure, in the right costovertebral angle, is of value in diagnosing gall-bladder disease.

Vaginal and rectal palpation of the lower ends

of the ureters is important. The writer has palpated stones, twice in the female and once in the male, by such examination.

Ureteral stones are very commonly passed spontaneously, so that, when present, effort should be made to dislodge them by ureteral-catheter manipulation, and catheter injection of

and the indigo-carmin tests. In cases of septic kidney in which nephrectomy is contemplated, with poor output from the second kidney, it must be remembered that the removal of the septic mass relieves the remaining kidney from the source of intoxication, and immediate improvement in the excretory function results.

In operating upon the kidney, exposure is essential to careful work. The mobilization of the twelfth rib, as practiced by Dr. W. J. Mayo, through division of the crural ligaments, is a most valuable means of obtaining exposure.

Pyelotomy, first performed by Czerny, in 1881,

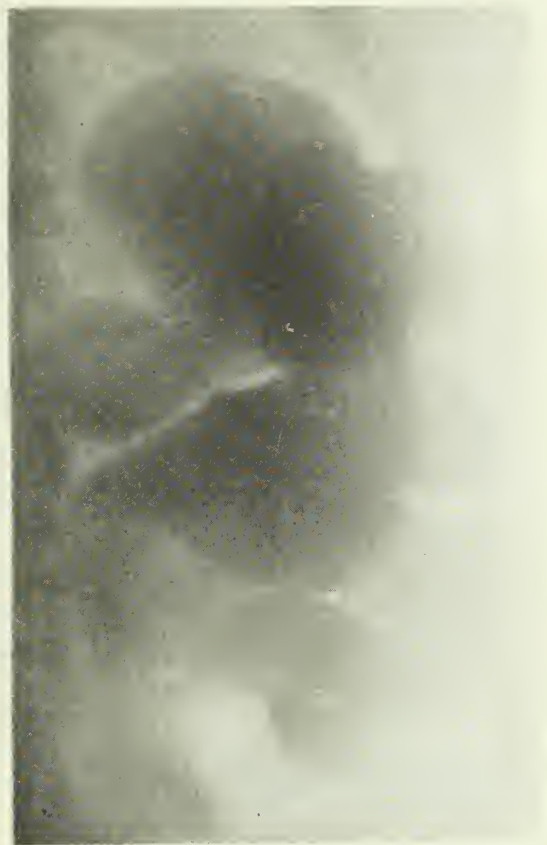


Fig. 3. Pyelogram of a large pyenephrotic kidney, secondary to a stone in the ureter. The kidney was removed by the subcapsular method.



Fig. 4. Pyelogram showing a stone in the cortex, and not in the pelvis.

warm fluids and oil. The patient should drink copiously. Cystoscopic examination should ascertain that urine is coming from the affected side; otherwise operation is imperative to save the kidney from back pressure. If the stones are not passed by such conservative treatment, ureterotomy is indicated. A ureteral catheter introduced to the site of obstruction, and left in situ is of assistance at the time of operation in locating the ureter and the stone.

An estimate of the excretory capacity of both kidneys is of the greatest value in deciding the character of intervention. In bilateral renal-calculus disease, it aids in deciding which kidney should be first attacked. The writer employs both the phenosulphonaphthalein test of Rowntree

is the operation of choice, being free from mutilation. The Payr method of turning down a flap of renal capsule is of assistance, in addition to the flap of near-by fat, in closing the pyelotomy opening when the same extends to the kidney attachment of the pelvis. Pyelotomy wounds should always be closed to avoid fistula development. Drainage, when required, should always be by tube through the cortex, the opening being made by passing a pair of closed forceps up through a calyx and the cortex. Nephrotomy incisions should be made through the avascular zone of Hyrtl, just posterior to the midline of the convexity. They should be placed directly over the site of the stones as determined by the x-ray shadow or by palpation, and should be of just sufficient length to carefully remove the calculus.

A long, clean-cut incision is much less destructive to the kidney than lacerating the same by tearing a large stone through a short incision. Stones should be carefully handled to prevent fracture and disintegration. Small fragments left in the kidney may develop into large stones, or may find their way into the ureter. The pelvis, or stone-cavity, should be carefully sponged and washed out with irrigation to force out débris, blood-clot, stone fragments, etc. A rubber-covered intestinal clamp applied to the pedicle, lightly closed, controls hemorrhage, and prevents stones or fragments from slipping into the ureter. Retrograde catheterization is always to be performed.

In moderate cases of hydronephrosis in which nephrectomy is not indicated the position of the pelvic ureteral orifice must be located, and the fact ascertained that it is so situated as to drain the pelvis without leaving a pouch of residual urine. Preliminary catheterization of the ureter, just prior to operation, the catheter being left in situ, facilitates locating the pelvic ureteral orifice. When the ureteral drainage of the pelvis is unsatisfactory, nephropexy, with a tilting of the longitudinal axis from the normal longitudinal to a transverse position, is superior to difficult and uncertain plastic operations on the pelvis and ureter. The Albarran nephropexy is performed, complete decortication being essential to success. The exposed kidney surface is brought in direct apposition to muscle and fascia, the excess fat being removed, thus obtaining direct scar-fixation. Artificial capsular ligaments are only of temporary value, holding the kidney in position until firm fixation has been obtained.

Large pyonephrotic kidneys should be removed by immediate nephrectomy if the patient's condition permits. If the patient is profoundly toxic, drainage of pus and removal of stones alone are indicated, and secondary nephrectomy, usually by the continental subcapsular method, is performed later, when the patient's condition has improved. The writer has been surprised to see a case of pyonephrosis profoundly toxic and in extremis, the mass extending to the abdominal midline and down below the level of the umbilicus containing several quarts of colon pus and large stones, close and heal without sinus or symptoms for two years, after simple evacuation and drainage without secondary nephrectomy. A second case has remained closed for six months.

In reviewing the writer's stone cases several seem to be of sufficient interest to warrant brief reference:

CASE 1. Calculous Anuria.—Mrs. A. N., an obese woman, aged 47 years, had complete suppression of urine for forty-eight hours, and was relieved by bilateral catheterization of ureters, the catheters being left in situ thirty-six hours. A stone from left ureter was later passed into the bladder after the catheter manipulation.

CASE 2. Stone in Horse-Shoe Kidney, Previous Appendectomy.—Mr. H. K., in University Hospital, No. 7,433, was admitted to the Medical Service of Dr. S. Marx White and transferred to the Surgical Service. An appendectomy was performed during the writer's vacation by his substitute. A stone in the horse-shoe kidney was removed by the writer from an anteriorly lying pelvis by pyelotomy. Röntgenogram taken by Dr. F. Bissell beautifully shows the horse-shoe kidney with the contained stone.

CASE 3. Ectopic Stone Kidney.—Miss G. Y., aged 29 years. Pyonephrosis in ectopic kidney containing three stones: Stones probably secondary. The migration of the right kidney arrested at the subappendiceal region. Patient was operated on for an appendiceal abscess, which was drained. The patient still has a fistula, which discharges some urine.

CASE 4. Acute Pyelonephritis with Nephrectomy during Pregnancy.—Mrs. E. S., aged 21; University Hospital. No. 9,176: Coral stone, complete cast of pelvis, and calyces. Appendix previously removed. The patient extremely septic; pregnant four months; necrotic; foul kidney nephrectomized; uninterrupted convalescence; uninterrupted pregnancy; admitted to obstetrical service of Drs. Litzenberg and Rothrock, and delivered normally of a live male child at term. The labor and puerperium are noted on the hospital record as being "uneventful."

CASE 5.—Mr. M. R., University Hospital, No. 5,038, aged 44 years. Pyonephrosis. Nephrectomy. Large blood-vessel to lower pole recognized, ligated and divided. The kidney contained three stones. Case was considered as having been primarily a hydronephrosis due to kinking of the ureter over an abnormal blood-vessel to the lower pole. Infection of the hydronephrosis; secondary stone-formation. Appendix previously removed elsewhere without relief.

CASE 6.—Chief operating-room nurse. Appendix was removed three years previously; the gall-bladder drained two years previously elsewhere; no relief. Small stone removed from the right kidney pelvis by pyelotomy; immediate and permanent relief.

CASE 7.—A farmer, aged 37. Left kidney spontaneously fistulized, and discharged two stones. Fistula had been discharging for three years. Subcapsular nephrectomy was performed.

In conclusion: Renal colic and pain in the kidney are absent in the majority of cases of nephrolithiasis. The disease commonly simulates biliary, appendiceal, and digestive disorders. The diagnosis of kidney-stone is identical with the indication for its removal, and must be made early to prevent the aseptic degenerative changes and secondary infection with its destruction, and to prevent unnecessary operations being performed, principally upon the already overworked appendix and gall-bladder.

THE JOURNAL-LANCET

The Journal of the Minnesota State Medical Association

and Official Organ of the

North Dakota and South Dakota State Medical Associations

PUBLISHED TWICE A MONTH

ESTABLISHED 1870

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Subscription - - - - - \$2.00 a year

PUBLICATION OFFICE

839-840 Lumber Exchange - - - - Minneapolis, Minn.

DECEMBER 15, 1917

NOTICE TO MINNESOTA SUBSCRIBERS

Members of the Minnesota State Medical Association who desire to have their subscriptions to THE JOURNAL-LANCET continued should notify us at once, remitting the price of subscription (\$2.00), as the paper no longer represents the Association.

MEDICAL MEN'S SACRIFICES

THE JOURNAL-LANCET feels that it ought to speak a word in behalf of the medical men who have already entered into the medical service of the United States government and have given, not only their time, their talents, and their money, but what to many of them is a very vital part of their life-work, the rearing and bringing up of families, the education of their children, and the support of their household. More than forty men have enlisted from the Hennepin County Medical Society alone, the largest county society in the State of Minnesota. A proportionate number have been drawn from other county societies or district societies, and each deserves the same praise and approbation as the man who is able financially to give up his business and give his time and talents to the government. The writer has in mind several men of state and national reputations who have either gone to a

foreign land or to Washington where their services as advisors were needed, or have gone to the various camps throughout the country and have done the ordinary work associated with camp-life, that is, the care of sick soldiers who have never seen or been near a battleline. This has been repeated in every state of the Union; and in many of the Eastern states men of note and fame as surgeons and physicians have gone abroad, enlisted for the period of the war, or have voluntarily gone abroad, paying their own expense for a limited time, six or eight months. Some of these men have returned and others have gone to Europe to take their places, so that the work would be uninterrupted.

Some of the medical men have gone to France to do Red Cross work,—numbers of them. Others have gone into associated fields without compensation, and some have even paid their entire personal expenses.

There is another side to the question, however, which must not be overlooked, and that is the younger men who have gone abroad, first, with a spirit of patriotism and, closely associated with it, the spirit of adventure, knowing full well that they would be near the firing-line and that they would be exposed to dangers and diseases and to death; but each has gone, as a young man should go, full of patriotism, anxious to do what he can for his country, and willing to sacrifice himself under the burden which he voluntarily imposes upon himself. The commissioned officers among the young men receive a moderate compensation. The man who goes as first lieutenant receives a salary of \$2,000 a year, and he finds that he can live and save money, not much perhaps, but he is able to save a part of his salary. A captain gets \$2,400 a year, and a major receives \$3,000 a year. This in itself is fair compensation, and doubtless there will be multiple returns, in experience, in adventure, and in association with one's fellow-men, not necessarily with the fellows who are already commissioned, but with the men in the ranks. One may do a great deal of drudgery, and may work even harder than he would work in private practice; but when he goes into it with the proper spirit his reward is such that he does not hesitate to make any sacrifice that may fall to his lot.

There have been many reports concerning the deaths among doctors in foreign fields and many rumors that large numbers of medical men have been slain, but these are only rumors, for statis-

tics show that the death-rate among physicians in the service is not very great.

There is still an urgent call for more doctors, although the government now has a reasonable number enrolled. Some of these men will have to be replaced, and there will be a constant drain upon the medical men of the country.

There is another form of sacrifice, too, which comes to the medical men, to the men who stay at home, who are obliged to do so, either from infirmity, defect, or over age. Many of the small places, and doubtless many of the large places are going to suffer from an inadequate supply of medical men. Already many of the smaller towns are recalling the old retired physician and he is responding with the same vigor and determination as the younger man who has already gone into service. Then, too, the men who remain will have to take up the work of those who have gone away, and this will mean extra work, often thrown upon men who are unable to assume greater burdens than they already bear. But these men have voluntarily expressed their willingness to take care of the patients of the doctor who is already away, and also to return to his family a fair percentage of the fees received for this work.

The Hennepin County Medical Society has adopted a plan by which its members will pay $33\frac{1}{3}$ per cent of fees collected from patients who are known to be patients of employed or commissioned medical men to their families. Of course there should be a co-operative sacrifice between the doctors who stay at home and the patients who demand attention. This is going to be the most difficult problem to handle, for every patient believes that he or she needs immediate service, and, if the doctor knows his patient and his family, he may feel called upon to advise them over the telephone or to tell them that he is unable to attend to them as promptly as they desire. They, too, will have to consider the sacrifice made by the man who goes into service and the man who stays at home. There is a funny side to all this. Some of the patients who think they need a doctor may find that they can get along without one, and doubtless many of the patients will recover without medical aid, and the usual fee will be lost.

Now is the time to express your willingness to go into service as reserve officers or commissioned officers; at all events into some branch of medical service where you can expend your best efforts.

RED CROSS SEALS

This is the season when the sale of Red Cross Seals is at its height, and committees from all over the country—from cities, towns, and villages—have been formed to promote the sale of the Seals. The term Red Cross Seal is a much-borrowed term, and has comparatively little to do with Red Cross work. In fact about only two and one-half per cent of the money raised by the sale of Seals goes to the Red Cross fund, which is clearly a compensation for the use of the term "Red Cross Seals." Two and one-half per cent goes to the National Association for the Study and Prevention of Tuberculosis, located in New York, and this percentage is for the conduct and the expense of handling the Red Cross Seals. Consequently, when it comes to the State of Minnesota or any other state, the smaller cities receive only a small part of what they give. Minneapolis receives from the sale of the Red Cross Seals about 75 per cent of the money raised, and if the sale of Seals extends over two millions an additional percentage is given to the city for its work. In St. Paul the amount retained is about 75 per cent, and in Duluth it is a little less. In the outside counties the percentage is greatly reduced, that is, the sum of money retained by the committees is sometimes 50 per cent of the amount they raise, and it is sometimes less. All of the money retained, wherever or however raised, in the localities in which it is raised is supposed to be used in anti-tuberculosis work. This, of course, in a city like St. Paul or Minneapolis means a very considerable sum that may be used for this very necessary purpose. In the smaller towns and cities and villages which are entirely under the control of the Minnesota Public Health Association, of which Dr. Murphy is the dictator, the amount of money retained by the committee is sometimes insufficient to accomplish any work at all, and, although Dr. Murphy is responsible for sending nurses to these various towns, the nurse usually does school work, and that not only covers general diseases, but may be only incidental in cases of tuberculosis, so that the country does not reap the same benefit from the sale of Red Cross Seals that accrues to the larger cities. This means that a nurse may be allotted to a town for one, two, or three weeks, but these weeks are school weeks, that is, five days in each week. The result has been a good deal of grumbling, and complaint that 50 per cent or even less of the fund that is raised by the smaller places is not used

according to promises. This has given rise to some misunderstandings and some friction.

A plan was devised by the Executive Officer of the Minnesota State Board of Health whereby a State Board of Health seal might be designed and sold for carrying on work among tuberculous patients in the state. A considerable amount of correspondence was carried on from the executive office with various towns throughout the state, and many favorable replies were received advocating the publishing and selling of a State Board of Health seal. When the matter was brought up at the meeting of the State Board of Health, in October, it was discussed generally, and, fortunately, at the time Dr. Hatfield, of New York, of the National Association for the Study and Prevention of Tuberculosis, was called in as an advisor. He very courteously explained why it would be inadvisable for the Minnesota State Board to put out its seal at the present time. There was no friction in the Board, and it finally decided that for the present a State seal would not be issued. In spite of the fact that the State seal would give the communities approximately 90 per cent of the amount expended without any middle-man, and without the interference of the Minnesota Public Health Association or its over-bearing secretary, if the suggestion of the Executive Officer were followed, the amount of money would have been greatly in excess of that allotted to the various communities by the Minnesota Public Health Association, but it was even thought best to postpone this for another period of time. Dr. Murphy immediately took advantage of the situation and published in his *Bulletin* an unnecessary attack upon Dr. Bracken, which means an attack upon the entire State Board, calling attention, in a flippant manner, to the fact that Dr. Bracken had met with a severe rebuke. As a matter of fact the rebuke should fall upon Dr. Murphy, where it justly belongs for he has been a thorn in the side of most of the anti-tuberculosis workers of the state, and his methods are not at all popular. As an illustration, he got into touch with the Anti-Tuberculosis Association of Minneapolis, and attempted, and succeeded, in binding the Association to a two-year contract for the sale of Red Cross Seals. He further tried to get them to extend this term to five years, when, as a matter of fact, he only had a one-year contract himself. Dr. Hatfield told the State Board of Health at its meeting that they never gave any organization more than a one-year contract, and

Dr. Murphy was evidently trying to bind some one down to not only an unfair, but a dishonest, contract. This, however, is simply in passing, because most of the men know Dr. Murphy and his methods.

The sale of Red Cross Seals will go on probably this year, and, in the larger cities at least, will be larger than ever before; and consequently, a larger sum of money in the larger cities may be devoted to the care of tuberculous patients. All of this THE JOURNAL-LANCET approves, and urges that the sale of Red Cross Seals be made as large as possible.

MISCELLANY

AN ACTIVE ASSOCIATION PRESIDENT

The North Dakota Association has a president who is very actively engaged in his presidential business. The following letter has gone to every member of the Association, and Dr. Williamson is engaged in many other ways in advancing the interests of his State Association:

NORTH DAKOTA STATE MEDICAL ASSOCIATION

Dr. G. M. Williamson, President
Grand Forks, N. D.

Dear Doctor:

I am very anxious to make my year as President of the North Dakota State Medical Association the best year in its history, and with that end in view I am seeking the help of every member in order that we may increase our membership by at least two hundred.

At our last annual meeting the Secretary's report shows that 385 physicians in the state are members of our Association. That is not enough. There are about 625 physicians in the state every one of whom should be a member. Now we must show the non-members that it is their duty to join with us.

At our annual meeting in New Rockford a communication from the Secretary of the A. M. A. was read suggesting that a field man be allowed to come to our state and assist in getting members for our local and state societies. I was opposed to that plan, stating that I believed better results could be obtained if we began an active campaign within our own Association. I come to you now and ask you to help me make good that statement.

Everybody within the Association has friends without. Now, can you not persuade one friend at least that it is to his interest to join with you and help make the profession in the state what you want it to be? There is no good reason why any man practicing in North Dakota should not belong to his local and the state societies, and there are many good reasons why he should.

The public are becoming more and more interested in scientific medicine and in men who are students. They look upon the man who never attends the scien-

tific meetings of his profession as a back number and one whom they do not care to consult. No man can live entirely to himself, and it is impossible for a doctor in any community to absent himself from the scientific meetings of his profession and keep abreast of the times. This is an age of scientific advancement along all lines; and scientific medicine is making rapid strides. It behooves the man who is practicing alone in any community to make an effort to meet with other members of his profession and keep in touch with medical progress.

Boards of examiners demand that a man seeking admission to their state must come as a member of his local society. I speak from experience when I say the North Dakota State Board of Medical Examiners looks with suspicion on a man who seeks admission to this state who is not a member of his local society; and an application may not be received unless endorsed by the President and Secretary.

Again, this is a year when great demands are being made on the medical profession. Our country is calling for volunteers for the Army Medical Corps. The demand is great at present, and before this time next year may be greater. It is the patriotic duty of every physician in the state to let it be known where he can be found when his country needs him. This condition makes it doubly imperative that all should be in the ranks of the State Association.

Let us put on a "drive" during the month of December so that we may begin the new year well organized and prepared to do our duty whenever called.

Yours fraternally,

G. M. WILLIAMSON, President.

LETTERS FROM SOMEWHERE IN FRANCE

EXTRACTS FROM LETTERS TO DR. H. B. SWEETSER, MINNEAPOLIS, FROM HIS SON, DR. THEODORE H.

SWEETSER, LIEUT., M. C.

I have just re-read an old letter from you in which you spoke of air-travel as wonderful. If your experience gives you that idea,—and it really should,—what would you think of some of the things that happen over here daily? What I saw, even around New York, seems to me now almost like child's play. In the first place, there are the stunts, things that you would never dream of as possible. For instance, turning like a screw while still maintaining the direction of travel; also "side-slipping." The latter is not a simple amusement, but it is used as a means of escape in air fights. However, it is not the stunts that make me marvel most: it is the wonderful dependability of the air-plane as developed by this war. That is one great advance that has been hastened many decades, at least, by this war. I have repeatedly seen more than twenty air-planes at once, flying in flocks at various heights and speeds.

The world will never again be the same, and that is one of the big factors that is changing it. Indeed, the armies are effecting great changes in material things. I am beginning to wonder how much society itself will have changed by the time we shall again see each other. America is certainly changing wonderfully or, at least, developing greatly. Great Britain, also, according to my impression, seems to be developing wonderfully (excuse the repetition, *wonderful* and *marvelous* are about the only words that fit). Of course, you know as much about Russia as I do, and I suppose Italy will

also be very different *après la guerre*. The war and contact are improving, also, my impression of the French, a really magnificent people. As to the Germans, I do not believe there is any doubt but that they will be a different people after the war. I think they are even now quite different. This is a queer world, isn't it? Here we are having a most frightful carnage, a most deadly slaughter; and yet the better sides of human nature out here do not seem to be dimmed at all. I would not wonder at all if the world should be a better place to live in after the thing is over than ever before. If we can only root out that terrible idea of military war as a means of gaining things! I think the German people will turn out pretty well after all—they're not so hopeless as they might be.

Well, so much for that. Now, if you want to see what the war looks like you might look at the *By-stander* of October 24, or the *Daily Graphic* of various dates, for the thirtieth of October, for instance. Of course, I cannot tell you of any places where I am, but some pictures in recent British papers are typical of things I have seen since coming across so long ago. Of course, the duck-boards are a universal institution and a very important one. I suppose the pictures in recent English papers and magazines of the gas masks, and so forth, must be interesting to you; they are intensely interesting to me. Some day, when I get home and see you, we'll have to dig up the files, and I'll tell you about many interesting things,—customs, institutions and various aspects of the war. Some of my memories are quite vivid.

In a letter early this afternoon, which I forgot to number (it should be No. 6), I told of hearing mass in a ramshackle place near a wrecked church.

I believe I told you that I am on a little detached job from my unit. Well, today in spite of a cloudy sky, two of us went for a walk. We started just after three and got back at six. We visited a famous battlefield, and crossed a shell-torn slope. I think the word now-a-days is "crater-field," isn't it? Well, the name fits. It was right over our lines and up to and across the first two Boche lines. There were still numbers of queer un-exploded engines of death of various kinds lying about. We left them severely alone. We also saw various pieces of equipment lying about and under the water in shell holes. In the rank growth of weeds and grass our heels occasionally struck metal, and we wondered what might happen. In the old No Man's Land and on the Boche parapet I picked some beautiful wild flowers which will be going home as soon as they have dried out. They should be good souvenirs. Scattered everywhere are graves with their wooden crosses; and a little farther on is the village which they never reached, except the Boche ones (a number of crosses are Boche). We identified the village by a couple of little pieces of iron fence, a piece of building stone, and a few bricks in a shell-hole. The woods 'round about were gone except for a few charred sticks not many feet high. The picture was surely one of awful desolation. But do not think from this that we are anywhere near the fight. The salvage man must be about the only one who goes near there. We are far behind the lines here, even farther than my own unit, and it is out a long way.

This life of the last two months has been a great education and training for me. I have met and lived successfully with many kinds of men. A fair amount

of responsibility has been put upon me at times, and I have had plenty of chances to use my common sense and knowledge of surgery and medicine. I have seen many beautiful and famous places and many quaint and picturesque spots, and, as you must know from frequent notices, I am moving from one unmentioned place to another, and there has been plenty of variety in my experiences. I have learned a little French, and expect to learn much more. I am struck with the marvellous courage and grit and cheeriness of the average Tommy,—in fact, they are practically all wonderful in that way.

The weather broke badly on the third (of October), and has been miserably cold, wet, and windy most of the time since. This weather makes war ever so much more terrible, especially for those wonderful Tommies in the line. On that day I was sent off again from my last detached temporary duty to another temporary job. I had to walk there, and so traveled light,—an extra pair of socks and union suit and toilet articles. A stretcher had to be my bed, and government blankets my covering. I slept in my clothes, except for my shoes, legging, coat, and hat. My feet got cold and damp, and I had to go walking down a muddy wet road to start the circulation and get them warmed up. Of course, both pairs of socks were damp by the fourth and last day. Being with strangers, under depressing conditions, and doing night work did not help my state of mind. My batman (orderly) felt the same way, especially in view of the fact that he skidded twice, and sat down in the mud while bringing up our food. We reached our home camp at 12:45 A. M.; I looked around for an empty tent to sleep in, and picked such a seeming one. I pulled the flap open and stuck my foot in when a voice from nowhere wanted to know who *** I was. It was Major Fiddes' voice. I asked for room for my man and myself; he said there was none. That was a hard blow for a quarter to one in the morning, and an hour's ride from my last station; but by persistence—a relic of my summer's work at salesmanship—I got him awake. When he realized we were not the large body of men he thought we were, we finally got accommodations. That night my foot actually froze because I forgot to wear my woollen socks to bed. Maybe you think there was little more time for sleep, but that night the army changed from summer time to winter time, consequently the clock stood still for an hour at one o'clock while I slept peacefully on. This noon before lunch, we ran the phonograph and the Colonel danced the Blue Danube waltz with me. But don't mention it, as it is hard on the Colonel's dignity, and this colonel is really very dignified on occasion.

As to the censored letter from London, which, you complained, had the interesting part cut out, it ought to be safe to say now that it was the story of our long fight with a "sub." Of course, as you see, we escaped. It was a fair starter for the war. Last Friday, Major Stephens and I went to a C. C. S. (Casualty Clearing Station) as a surgical team. Our first spurt of work lasted for sixteen hours, from 5 P. M. to 9 A. M. with time out for eating and a little a few times for cleaning up. We did twenty-one or more operations during that time. The next night we worked only eight hours, so you see the rush had slackened. As to following up cases: it cannot be done in case of wounds, as we pass the patients down the line, and never see them again. As to the sick: we never seem to be placed

where we can see them for more than about ten days at most. Then they have to go back to duty or down the line.

Major Fiddes caught a ride on a lorry the other day. After talking a few minutes with the driver, he said, "Aren't you an American?" Here's the answer: "No, I've got a cold and I've been gassed twice." And what do you think of that?

Talking about food, it is the same every meal, but it is very good. This is it: boiled beef, corn-meal pudding, potatoes, and, of course, the everlasting bread, with margarine and jam. Tomorrow I shall be where the diet is more varied. This afternoon I struck an army canteen, and have had a feast on caramels.

This morning I went to mass in a French chapel in an old movie theater whose walls were all pitted and peeled with shell fragments. The floor was of cinders. The chapel is in the shadow of a village church ruined by shell-fire. The place was crowded by men, women, and children, and a few French and British soldiers, as is true of all French churches anywhere near the war area. And the text was, "We go on in spite of any discouragement."

Thus far the war has brought me much less discomfort than I had anticipated. It is a good thing I came over here expecting a very rough time. From my letters you can see there is a lot of comfort and good cheer after all, in most places, especially if you keep your eyes open to that side of life. Today is a chilly windy November day with clouds and occasional rainstorms. I am sitting in the big "Nissen" hut about four feet from a big wood-stove fire, and still I shiver frequently. I'd be all right if I only had some of that heavy wool underwear I was going to get in Paris.

BOOK NOTICES

PRACTICAL URINALYSES. By B. G. R. Williams, M. D., Director Wabash Valley Research Laboratory, Author of Laboratory Methods, etc. Illustrated. St. Louis: C. V. Mosby Company. 1916. Price, \$1.25.

This book is what its name suggests, a clear fairly concise résumé of laboratory methods for urinalyses which have proven their practical reliability. It is written from the viewpoint of the clinical pathologist, who wishes the analysis as a guide to diagnosis and treatment; and it touches on the theoretical side just enough to afford a clear understanding of the procedures and their results. The author's warnings and exceptions are those which must be borne in mind by the laboratory worker, and are those which the author has evidently found valuable in his own experience.

A little greater care in punctuation and phraseology might have added to the book from a literary standpoint; yet the book should prove a help, especially to nurses or medical students engaging in laboratory work, or to the man who does his own work occasionally and yet has not time to become conversant with the methods and theories of the larger text-books.

—MARGARET I. SMITH.

PEDIATRICS. Edited by Isaac A. Abt, M. D., Professor of Pediatrics, Northwestern University Medical School, with Collaboration of A. Levinson, M. D., Associate Pediatrician, Michael Reese Hospital. Or-

thopedic Surgery. Edited by John Ridlon, A. M., M. D., Professor of Orthopedic Surgery, Northwestern University Medical School, with Collaboration of Charles A. Parker, M. D. Practical Medicine Series, Volume Five. Cloth. Price, \$1.35. Pp. 240, with 24 illustrations. Chicago: Year Book Publishers, 1917.

This book gives a résumé of the most important articles published during 1916-17 on pediatrics and orthopedic subjects. The pediatric section, in addition to the abstract of papers, is enriched by the judicial comments of the editor. In the orthopedic section the comments are more sharply critical and argumentative than one would expect in a volume of this kind.

The book is to be highly recommended for those who desire a short review of the progress in these subjects.

—HUENEKINS.

DISEASES OF THE SKIN. Second Edition. By Richard L. Sutton, M. D., Professor of Diseases of the Skin, University of Kansas School of Medicine; former chairman of the Dermatological Section of the American Medical Association; member of American Dermatological Association; Assistant Surgeon United States Army, retired; Dermatologist to the Christian Church Hospital. Price, \$6.50. St. Louis: C. V. Mosby Co., 1917.

The first edition of this work was reviewed in these columns in August, 1916. Among the new topics considered are "Gangrenous Balanitis," "Atrophy of the Mucous Membranes of the Tongue and Mouth," and "Atrophy of the Fatty Layer of the Skin." The article on *perleche* has been rewritten; and the treatment of *pediculosis* has been amplified. Also a few typographical errors have been corrected.

The new edition contains 140 new illustrations and 100 new pages of text. The illustrations are all very clear, and enhance the value of the book especially from the standpoint of the general practitioner.

—BOREEN.

REPORTS OF SOCIETIES

THE MINNESOTA ACADEMY OF MEDICINE

The November meeting of the Academy of Medicine was held on the 14th of the month, the president, Dr. Cross, presiding.

Reports of cases being called for, Dr. Dennis gave the history of, and described the operation for, a case of ureteral stone. The specimen exhibited was about the size of a bean, and was removed from the ureter about an inch above its lower end. He also reported another case, that of a woman sixty-five years of age, who at intervals passed blood in the urine. The bladder was opened from above, and a large papilloma removed with a snare.

Dr. Farr reported a case of vesical calculus that he recently removed from a man thirty-two

years of age under novocaine. With the cystoscope in the bladder, a stab-wound was made into that organ just above the symphysis. The stone forceps was then introduced through the wound, and the calculus grasped and removed under the direction of the cystoscopist. The operation took about eight minutes, the patient suffering little more inconvenience than might be expected from cystoscopy alone. Dr. Farr has recently developed a technic which he thinks will be of advantage in certain cases where it is desirable to open the ureter transperitoneally.

Dr. Farr also reported a fracture-dislocation of the shoulder, which he reduced under brachial anesthesia.

In speaking of the difficulty met with in locating the ureters, Dr. Abbott mentioned the fact that the duct can generally be distinguished by its peculiar movements. He compared them to those of the measuring-worm when that creature is in locomotion.

Dr. Benjamin reported two goiter cases in which he recently operated. One was cystic, the other was complicated by cardiospasm.

Dr. Leavitt reported the case of a young woman he recently delivered of twins on whom he performed Cesarean section five years before. At that time she was a patient in the University Hospital; this time she was at the City Hospital, St. Paul. Section had been resorted to in the first instance because of a moderately contracted pelvis, and only after giving labor a fair trial. In her recent pregnancy it was thought probable that a repetition of the operation would be necessary, and preparation was made for it. Twins were diagnosed in the seventh month. When labor began she went at once to the hospital, the pains continuing normally from late evening until the following morning. Meanwhile she was watched closely, and her pains ameliorated by an occasional dose of morphine and atropine. By eight o'clock the cervix was fully dilated, and the head well engaged. Though it was not unlikely that birth would have taken place spontaneously in time, it was thought best to aid with the forceps. The same might be said of the second twin; but, after waiting half an hour without much progress being made, a high forceps delivery was made. Neither child was injured, nor was the mother lacerated. One baby weighed seven pounds and eight ounces; the other, seven pounds and twelve ounces.

The essay of the evening was read by Dr. Arnold Schwyzer, the title of his paper being "Re-

cent Immunological Findings in Tuberculosis, with Special Reference to Surgical Tuberculosis." Two or three members commented on the excellence of the paper, but there was no general discussion. It was moved that the Academy extend a vote of thanks to Dr. Schwyzer for his able paper.

Thirty-five members and five visitors were in attendance.

FRED ELMER LEAVITT, M. D.,
Secretary.

NEWS ITEMS

NOTICE TO MINNESOTA SUBSCRIBERS

Members of the Minnesota State Medical Association who desire to have their subscriptions to THE JOURNAL-LANCET continued should notify us at once, remitting the price of subscription (\$2.00), as the paper no longer represents the Association.

Dr. B. T. Battolfson has moved from Mahnommen to Holstad.

Dr. J. G. Connelly has given up practice at Lake City, and will locate elsewhere, probably in Iowa.

It is now believed that a base hospital will be established on the Campus of the University of Minnesota.

Dr. P. E. Stangl has given up the management of the Pilon Hospital at Paynesville, and resumed practice at St. Cloud.

Dr. John Saari, who has been connected with the More Hospital of Eveleth, has been ordered to report at Ft. Riley.

Major J. Frank Corbett is taking a course in brain surgery in the Presbyterian Hospital, Chicago, before leaving for Europe.

It is now announced that Dr. Walter R. Ramsey, of St. Paul, will not go to France before spring. His work will be among children.

Dr. A. J. Chesley, of the Minnesota State Board of Health, will hold a poliomyelitis clinic in Duluth on January 21st.

Major J. P. Sedgwick, of Minneapolis, who has been working in France, will be at home for the holidays.

Dr. James P. Aylen, of Fargo, N. D., who has been in training at Ft. Benjamin Harrison, has been transferred to New York for training in brain surgery.

Major E. P. Quain, of Bismarck, N. D., has been transferred from Boston to Ft. Oglethorpe, Ga.

Dr. J. D. Fuller has moved from Burlington, N. D., to Plaza, N. D., and is associated with Dr. G. L. Rudell, of that place.

Captain J. M. Northington, of Minneapolis, will leave soon for Camp Dodge to work in cardiovascular examinations of men in that camp.

Dr. Wm. P. Zolwin, of Casselton, N. D., who has been in training at Ft. Riley, Kan., has been ordered to Portland, Ore., to examine men for aviation work.

The founder of Osteopathy, Dr. Andrew T. Still, died at Kirksville, Mo., last week at the age of 89. Old age sometimes comes to those who give when denied to those who take.

The Medical School of the University of Minnesota has hopes of receiving a gift of a million dollars from the Rockefeller Foundation. The University Hospital work, as planned by the Faculty, demands twice the above amount.

At the annual meeting of the Ramsey County Society, held the last of November, the following officers were elected: President, Dr. Robert Earl; vice-president, Dr. E. W. Buckley; secretary-treasurer, Dr. E. W. Hammes.

Mr. A. McCoy, chemist and bacteriologist in the Public Health Laboratory of North Dakota, has been recently transferred from the main laboratory at the University to the Bismarck

Dr. Harold Cooperman was recently appointed city Health Officer for Grand Forks, N. D., to succeed Dr. Arthur Dean, who has been city Health Officer for several years.

Dr. F. C. Todd and Dr. W. E. Patterson, of Minneapolis, have moved from the Donaldson building to commodious quarters in the new building at 808 Mary Place.

Major Frank C. Todd, of Minneapolis, gave an admirable and informing address before a large Minneapolis audience last week on "Making Medical Men Military." His moving pictures portraying camp life were highly appreciated.

The Minnesota Social Hygiene Commission has been organized, and a large part of its work will be a strenuous fight on venereal diseases. The Commission may go so far as to demand the registration of every person so affected, and thus compel treatment looking to a cure.

The Minnesota committee to recommend physicians for appointment on the local advisory boards to be established are Dr. Archibald MacLaren (chairman), St. Paul; Dr. A. S. Hamilton (secretary), Minneapolis; Dr. W. H. Magie, Duluth; Dr. J. H. Adair, Owatonna; and Dr. A. E. Spaulding, Luverne.

The Surgeon General's Office says that at least 10,000 men between the ages of 18 and 40 years are urgently needed at once for the U. S. Army. This information is absolutely reliable, although it contradicts many statements to the effect that few men are now needed for the Medical Reserve Corps.

At the annual meeting of the Southern Minnesota Medical Association, held on November 27, officers for 1918 were elected, as follows: President, Dr. M. S. Henderson, Rochester; first vice-president, Dr. A. E. Sohmer, Mankato; second vice-president, Dr. P. F. Holm, Wells; secretary, Dr. H. T. McGuigan, Red Wing; treasurer, Dr. G. F. Merriitt, St. Peter.

The following North Dakota men have been commissioned, in addition to those reported in former issues of THE JOURNAL-LANCET: Dr. John G. Abbott, 1st Lieut., Hope; Dr. Victor H. Stickney, 1st Lieut., Dickinson; Dr. James F. Hanna, 1st Lieut., Fargo; Dr. Andrew J. Heimarck, 1st Lieut., Finley; and Dr. Wm. A. Gerish, Capt., Jamestown.

The Seventh District Society of South Dakota held its annual meeting at Sioux Falls, S. D., last week. Officers for the current year were elected as follows: President, Dr. J. G. Parsons, Sioux Falls; vice-president, Dr. G. W. Bliss, Valley Springs; secretary-treasurer, Dr. Goldie Zimmerman, Sioux Falls. Papers were read by Drs. R. B. Armstrong and R. M. Waters, of Sioux City, Iowa.

A wholly mistaken impression as to the pay, especially the allowances, given to medical men in the Reserve Corps exists. A first lieutenant gets \$2,000 and quarters; a captain, \$2,400 and quarters; and a major, \$3,000 and quarters. In addition, a ten per cent advance of the salary received is given for foreign service, with liberal traveling expenses. The cost of food, which officers pay, is not high; and clothing is purchased at government cost prices.

The well-nigh universal testimony of the medical men who are in active army service is to the effect that there is no "pull" great enough to obtain advancement or favors. It is merit, and

merit alone, that counts. A subscriber requesting a change of address of his journal, added to his name the word "major," which he starred, and made the foot-note read "Camouflage for Country 'Dock'." Had he not forgotten, or abandoned, the Latin of prescription-writing, he would have added "country Dock" "cum laude," which, in English, *may* mean "big pull."

Dr. G. F. Ruediger, formerly Professor of Bacteriology and Pathology at the University of North Dakota, Director of the State Public Health Laboratory, and for the last four years Director of the Hygienic Institute at LaSalle, Ill., has recently gone to Nevada to accept a position similar to the one he formerly held at North Dakota. Dr. Carl F. Raver, formerly assistant in the Public Health Laboratory of North Dakota and more recently Director of the City Laboratory at Aberdeen, S. D., has succeeded Dr. Ruediger at LaSalle.

Medical advisory boards are to be appointed throughout the country to assist local examining boards, especially in the matter of drafted men who claim exemption because of physical disability. These boards will be appointed by the governor of the state with the aid of Medical Reserve Corps officers. Such officer on the Minnesota board is Dr. Wm. J. Mayo, of Rochester; on the North Dakota board, Dr. Victor H. Stickney, of Dickinson; on the South Dakota board, Dr. Fred A. Spafford, of Flandreau, S. D.; and on the Montana board, Dr. Thos. C. Wither- spoon, of Butte, Mont.

The Central States Pediatric Society met in Minneapolis on December 10 and 11. The attendance included leading specialists in pediatrics from Cleveland, Cincinnati, St. Louis, Kansas City, Omaha, Chicago, and elsewhere. At an annual meeting of this body of specialists, the program, in the main, is given by the men of the city or state in which the meeting is held. The purpose of this plan to enable the Society to learn what is being done in the locality of the meeting. Each of the following well-known specialists in children's diseases appears upon the program one or more times: Dr. O. W. Rowe, Duluth; Drs. A. J. Gillette, Carl Chatterton, T. J. Christison, T. L. Birnberg, Walter R. Ramsey, A. G. Alley, E. F. Warner, Mildred Ziegler, of St. Paul; and Drs. F. L. Adair, E. J. Huenekens, F. W. Schlutz, R. E. Scammon, Max Seham, E. T. Bell, G. C. Groebner, Hal Downey, Rord Taylor, and F. C. Rodda, of Minneapolis. Clinics were given in the hospitals of St. Paul and Minneapolis.

The following medical men have been examined at the University of Minnesota and recommended for commission from September 14 to December 8, inclusive: John G. Abbott, Hope, N. D.; Grover C. Black, Minneapolis; Herbert A. Burns, Hutchinson; H. C. Caldwell, St. Croix Falls, Wis.; W. G. Carhart, Minneapolis; John M. Conway, Spring Valley, Wis.; E. W. Cowern, North St. Paul; D. L. Dawson, Rice Lake, Wis.; J. J. Donovan, Litchfield; J. E. Dyson, Sisseton, S. D.; R. H. Edmiston, Winnipeg, Man.; J. C. Ferguson, St. Paul; A. S. Fleming, Minneapolis; W. E. Grempler, Minneapolis; G. B. Hamlin, Minneapolis; H. C. Hansen, Minneapolis; F. N. Knapp, St. Paul; L. J. Leonard, Minneapolis; F. B. Mach, Minneapolis; Hertz N. Meleck, Minneapolis; J. P. Michael, St. Paul; W. F. Montgomery, Eau Claire, Wis.; R. G. Nelson, Cut Bank, Mont.; J. M. Neal, Minneapolis; W. W. Nouth, Minneiska; D. F. O'Connor, Elkton, S. D.; W. H. Phillips, Jordan; M. C. Piper, Sanborn; U. V. Portman, Jackson; W. B. Roberts, Minneapolis; H. H. Sellars, Minneapolis; G. M. Sewall, Deerwood; B. J. Shallett, Minneapolis; M. J. Shapiro, Minneapolis; H. M. Slater, Minneapolis; H. R. Smith, Minneapolis; N. M. Smith, Minneapolis; John Stevens, Gouville; H. W. Stone, Faribault; E. S. Strout, Minneapolis; J. L. Ten Broeck, Minneapolis; T. J. Trutna, Silver Lake; H. I. Twiss, St. Paul; F. E. Weed, Park River, N. D.; M. W. Wheeler, Glencoe; S. E. Williams, Chippewa Falls, Wis.; H. S. Willson, Minneapolis; I. G. Wiltrout, Swanville; A. E. Williams, Backus; A. A. Wohlrabe, Manakato.

LOCATION DESIRED

A surgeon, Norwegian, of middle age, wishes to become associated with a general practitioner in Minneapolis. Address 606, care of this office.

LOCATION WANTED

In North Dakota or Minnesota. Must have good schools. Practice should average \$4,000 to \$5,000 collectible. Address 602, care of this office.

POSITION WANTED

Position in doctor's office by graduate nurse who can also do stenographic work. References. Lucy E. Halbert, R. N., 4939 Girard Ave. So., Minneapolis, Minn. N. W. Colfax 5198.

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Good practice in live town of 1,200 near Twin Cities. Every modern convenience. Good country. Collections A-1. Good office equipment cheap. Real estate optional. Address 605, care of this office.

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Two positions wanted in doctors' offices. One stenographer with several years' experience and one experienced in general office work, some experience in typing and bookkeeping. Address 604, care of this office.

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A Scheidel-Western 16-inch coil with three-point mercury interruptor and high-frequency resonator; one new x-ray tube; full set high frequency electrodes. All in first class condition. Operates on 110 D. C. only. Address 608, care of this office.

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I will sell for \$75.00 a made-to-order coupe body, complete with lamps, seat covers, etc., in excellent condition. Suitable for chassis 112-inch to 124-inch wheelbase. Address W, 802 Donaldson Bldg., Minneapolis. N. W. Phone, Main 1815.

OFFICE FOR RENT IN MINNEAPOLIS

I have been called into active service, and will therefore sub-let my office in the Physicians and Surgeons Building. I have a small private office with an interest in the reception-room held in common with a specialist. Address 607, care of this office.

PRACTICE FOR SALE

Office fixtures and drugs amounting to \$500, and with them a \$5,000 annual general and surgical practice. I am ready to give immediate possession or will stay if necessary until I am called for active duty. Have commission in U. S. R. Address Dr. A. W. Swedenburg, Gully, Minn.

PRACTICE FOR SALE

Unopposed \$4,500 practice in town 500 in North Dakota. Splendid opportunity for a Scandinavian physician. County thickly populated, and always good crops; territory large, good roads, and large fees. Price of office, equipment and practice, \$600; terms. Write for further particulars. Address 612, care of this office.

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A \$4,500 unopposed North Dakota practice in a thriving town of 500, large territory, good fees, collections 98 per cent. Railroad division appointment for same including 100 miles; eight insurance companies transferable. Practice and good office equipment for \$700. Terms if desired. Further information on request. Leaving to specialize. Address 611, care of this office.

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A \$6,000 unopposed general practice in Minnesota in a progressive town of 800 on railroad; fine farming district; all modern improvements; good schools, roads, and collections; three towns tributary. Man doing major surgery should double income; exceptionally fine office outfit, etc. All for \$1,500; half cash, balance, bankable note. Address 609, care of this office.

OFFICE FOR RENT

Over ten per cent of the physicians of Minneapolis have been called to war. This has left many vacant offices, many of them in central locations, making an opportunity for physicians and dentists in outside locations to come to the center. The Pillsbury building, Sixth and Nicollet, is in the heart of Minneapolis, and offers some excellent space in single, double, or en suite.

SANITARIUM FOR SALE

Excellent lake shore sanitarium site with a fifteen room main building and seven cottages, together with all other necessary outbuildings, beautifully situated on 70 acres of wooded land. Located in the heart of the pines, within convenient distance of the Twin Cities, and close to railway station and town. Splendid macadamized road to property. Will make a very interesting proposition of sale or exchange on this property. Ask for Mr. W. E. Wakeman, Thorpe Bros., 206 Andrus Building, Minneapolis, Minn.

PRACTICE FOR SALE

A \$10,000 practice in a live Southern Minnesota city, both surgical and general. The city is noted for its excellent roads, schools, factories, residences, streets, and its water, sewer, gas, electric, and heating plants—an open hospital. On three main line railways. Reason for selling: specializing with an established specialist in a larger center. Will sell for invoice price of equipment; real estate optional. In answering give age, school, practice, etc. Address 613 care of this office.

NEW ORLEANS POLYCLINIC

The Graduate School of Medicine of the Tulane University of Louisiana, thirty-first annual session, opened Sept. 24, 1917, and closes June 8, 1918. Physicians will find the Polyclinic an excellent means for posting themselves upon modern progress in all branches of medicine and surgery, including laboratory and cadaveric work. Special attention given to military matters this session. For further information address Charles Chassaignac, M. D., Dean, New Orleans Polyclinic, post-office drawer 770, New Orleans. Tulane also offers highest class education leading to degrees in medicine, pharmacy, dentistry, hygiene and tropical medicine.

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REPORTED FROM 83 CITIES HAVING A POPULATION OF 1,000 OR UPWARDS

[illegible]

REPORTED FROM 53 VILLAGES HAVING A POPULATION OF 1,000 OR UPWARDS

VILLAGES	Population U. S. Census of 1900	Population U. S. Census of 1910	Total Deaths	Tuberculosis of Lungs	Other Forms of Tuberculosis	Pneumonia	Diphtheria	Scarlet Fever	Measles	Small Pox	Whooping Cough	Acute Anterior Polyomyelitis	Epidemic Cerebro- Spinal Meningitis	Typhoid Fever	Diarrheal Diseases of Children	Cancer	Puerperal Septicemia	Accidental Deaths
Adrian	1,258	1,112	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Aitkin	1,719	1,638	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Akeley .....	..	..	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Appleton	1,184	1,221	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Belle Plaine	1,121	1,204	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Biwabik .....	..	1,690	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Bovey .....	..	1,377	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Browns Valley	721	1,058	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Buffalo	1,040	1,227	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Caledonia	1,175	1,372	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cass Lake	546	2,011	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chisholm .....	..	7,684	11	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Coleraine .....	..	1,613	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Delano	967	1,031	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Farmington	733	1,024	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fosston	864	1,055	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Frazee	1,000	1,645	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Grand Rapids	1,428	2,239	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hibbing	2,481	8,832	12	2	1	..	1	..	..	..	2	..	..	..	2	..	..	..
Jackson	1,756	1,907	0	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Janesville	1,254	1,173	3	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Kenyon	1,202	1,237	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lake Crystal	1,215	1,038	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Litchfield	2,280	2,333	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Long Prairie	1,385	1,250	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madelia	1,272	1,273	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Milaca	1,204	1,102	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mountain Lake	959	1,081	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nashauk .....	..	2,080	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North Mankato	939	1,279	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
North St. Paul	1,110	1,404	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Osakis	917	1,013	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Park Rapids	1,313	1,850	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pelican Rapids	1,033	1,019	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Perham	1,182	1,376	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pine City	993	1,258	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Plainview	1,038	1,175	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Preston	1,278	1,193	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Princeton	1,319	1,555	3	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..
St. Louis Park	1,325	1,743	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sandstone	1,189	1,818	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sauk Rapids	1,391	1,745	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Stillwater	1,422	1,343	0	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Springfield	1,511	1,482	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Spring Valley	1,770	1,817	3	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Wadena	1,520	1,820	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Wells	2,017	1,755	2	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
West Minneapolis	2,250	3,022	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wheaton	1,132	1,300	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
White Bear Lake	1,288	1,505	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Windom	1,944	1,749	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Winnebago City	1,816	2,555	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Zumbrota	1,119	1,138	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

STATE INSTITUTIONS

Anoka, Asylum	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Faribault, School for Blind	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Faribault, School for Deaf	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Faribault, School for Feeble Minded	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fergus Falls, Hospital for Insane	11	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hastings, Asylum	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Minneapolis, Soldiers' Home	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Owatonna, School for Dependents	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Red Wing, State Training School	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rochester, Hospital for Insane	14	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Sauk Centre, Home School for Girls	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
St. Peter, Hospital for Insane	9	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
St. Cloud, State Reformatory	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stillwater, State Prison	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

OTHER PARTS OF STATE

	600	57	8	21	6	4	2	...	1	...	1	1	33	43	3	53
Total for state	1656	138	31	52	24	4	3	...	11	...	2	8	116	139	9	125

*No report received. REGISTRAR not doing his duty.

116 stillbirths not included in above totals.

PUBLISHER'S DEPARTMENT

SURGICAL GLOVES

When the Lincoln Rubber Co., of Akron, Ohio, put their "Knucklfit Gloves" on the market, with a "surgical eye" in the finger-tip, they set a high standard in surgical gloves for their competitors to meet and for themselves to maintain. That they have maintained such a standard in the fit and the quality of their gloves is testified to by the increasing demand for them.

Messrs. Noyes Bros. & Cutler are the Northwestern agents for the "Knucklfit Gloves," and any pair of them not meeting the requirements of the most exacting surgeon will be—well, hard to find.

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Not a few of our leading writers on food values, including the digestibility of such foods, now place puffed wheat and puffed rice practically at the top of the list of all foods. This is because of the high degree (550) of heat at which these cereals are dextrinized. Fortunately these staples also have a delicious flavor, and when eaten with cream or with whole milk, if cream is too rich, they make an almost ideal food for both the invalid or convalescent and for the healthy person, adult or infant.

If anyone thinks the above statements are exaggerations, he will soon discover his mistake if he consults the work now being done by experts in food values.

The Quaker Oats Company manufacture these foods, and their reputation guarantees a uniform product of the highest grade.

"AIDS IN DIAGNOSIS"

The commercial laboratories now put into the hands of every practitioner, wherever he lives or however unaccustomed he may be to laboratory work, all the "aids in diagnosis" furnished by expert laboratory workers.

The Chicago Laboratory (25 E. Washington Street, Chicago) is conducted by men of very high professional standing, and they demand only reasonable charges for such work, some of their prices being given in their announcements appearing in these pages from time to time, and are always furnished upon application.

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The general practitioner cannot be urged too strongly to use the facilities put within his reach by the Chicago Laboratory.

MUDCURA SANITARIUM

The sulphur-mud and sulphur-water baths are thought of by many as purely summer affairs, while they are nothing of the kind. On the contrary, they are even more of a luxury in winter than in summer when given

in a steam-heated bath-room. The Mudcura Sanitarium at Shakopee, Minn., conducted by Dr. H. P. Fischer for many years, is a really attractive place for the tired-out business man or woman to go, not only for a few days, but for many days if run down by overwork and nervous strain, or if troubled with so-called rheumatism, acute or chronic, or by certain forms of bladder and kidney disease.

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Dr. Fischer will be pleased to hear from physicians who desire to find relief for their patients in whom such treatment is indicated.

ASBURY HOSPITAL OF MINNEAPOLIS

One first-class hospital differs from another first-class hospital more in its air than in any other respect. The Asbury Hospital of Minneapolis is pervaded by an air created by its superintendent and her staff of assistants. It is an air of service. The watchwords of everyone who comes into contact with patients is *unselfish, impartial, impersonal*.

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Asbury Hospital is beautifully located on Elliott Park, and is thoroughly equipped. Its prices are moderate, and it does its share—and often more—of charitable work; but it will not do pauperizing work.

Its management is a credit to its superintendent and to the medical profession.

RIVER PINES SANATORIUM

This ably conducted sanatorium for the care of tuberculous patients recognizes and emphasizes the fact that in the treatment of tuberculosis "climate is not a specific," that environment "inspires a motive to live," and that "scientific medical and surgical skill and personal supervision aid natural processes in repair."

The above statements, as formulated by Dr. John W. Coon, the Medical Director of the River Pines Sanatorium, give, in brief and comprehensive form, all that is best in the modern therapy of tuberculosis.

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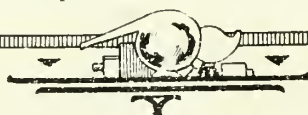
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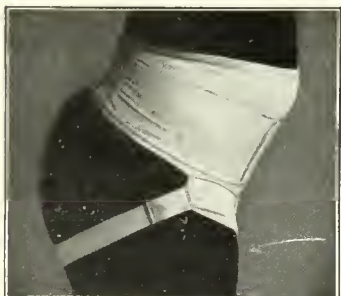
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